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12 January 1978

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BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 85

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| Botany | Public Health | | | | | | | | | | | | | | | | | | | |
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JPRS 70464

12 January 1978

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS
BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 85

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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I. BIOMEDICAL
Agrotechnology

USSR

UDC 631.82

USE OF COMPUTERS IN PLANNING DEPLOYMENT OF MINERAL FERTILIZERS

Moscow AGROKHIMIYA in Russian No 7, 1977 pp 111-117 manuscript received
21 Jun 76

MIKHAYLOVA, N. N., and PANOV, YE. T., TSINAO [Expansion unknown], Moscow

[Abstract] Description is provided of a computer program, Radoz-2, designed to provide criteria for the proper use of mineral fertilizers in the nonchernozem regions of the RSFSR. The selection of the appropriate fertilizer and conditions of application is based on data on the soil reserves and forms of mobile phosphorus and potassium, erosion, field history, previously used fertilizers, cultivated crops, and the desired harvests and characteristics of intended crops. The program was used in 1975 and 1976 in the Moscow, Vladimir, Smolensk, and Perm oblasts.

References 28: 26 Russian, 2 Western.

USSR

UDC 631.82:633.11(470.32)

EFFECTS OF MINERAL FERTILIZERS ON YIELD AND PROTEIN CONTENT OF WINTER WHEAT IN THE CENTRAL RUSSIAN CHERNOZEN-FOREST STEPPE PROVINCE

Moscow AGROKHIMIYA in Russian No 7, 1977 pp 40-47 manuscript received
11 Jun 76

DERZHAVIN, L. M., SEDOVA, YE. V. and POZDNYAKOVA, N. S., TSINAO [Expansion unknown], Moscow

[Abstract] Data were analyzed for the harvests and protein content of Mironovskaya-808 winter wheat in the Central Russian chernozem-forest steppe zone in relation to meteorologic conditions, soil chemistries and the levels of mineral fertilizers used. Use of nitrogen fertilizer at a level of 90-120 kg/hectare resulted in a maximum increase in crop yield of ca. 10 quintals/hectare and a maximum grain protein content of ca. 12% in the presence of 6% soil humus. In the presence of 3% soil humus maximum grain protein content was less than 8%. Deployment of 60 kg/hectare phosphorus fertilizers improved harvests by ca. 6 quintals/hectare; 90-120 kg/hectare phosphorus fertilizer applications were without a significant further improvement. Addition of potassium fertilizers (60 kg/hectare) improved the crop yield by only ca. 3 quintals/hectare; a further increase in the level of potassium fertilizers (90 quinals/hectare) had an adverse effect on the yield. Maximum crop yields (40 quintals/hectare) and grain protein content (16-19%) were seen on soil with $P_{2}O_5$ levels of 100 mg/kg and K_2O levels of 150 mg/kg. Figures 6; references: 14 Russian.

USSR

UDC 631.11:621.3.03

STUDY OF 10 KV DISTRIBUTION NETWORKS FOR POWER SUPPLY TO ANIMAL COMPLEXES AND LARGE FARMS OF THE LOWER VOLGA BASIN

Moscow DOKLADY VASKHNIL in Russian No 9, Sep 77 pp 35-37 manuscript received 16 Feb 77

AKIMTSEV, YU. I., candidate of technical sciences, Volgograd Agricultural Institute

[Abstract] One element of an electric power supply system--a 10 kv distribution net in Volgograd Oblast--has been examined as a model in a program of evaluating existing facilities and developing new and improved power resources for support of animal husbandry and farms in the lower Volga valley. Plans have been prepared--by the Volgograd Department of Complex Planning of the Volga Basin Division of the SEL'ENERGOPROYEKT--for construction and development, in 1975-1985, of eight RES (rayons of electrical networks). The animal production to be supported includes cattle feeding, dairy farming, pig, sheep, and poultry farming. Data on 167 existing complexes has been analyzed; 884 complexes and farms are projected in plans for the Oblast. Two average models, M1 and M2, of a 10 kv distribution network are considered. M1 is a group of complexes, newly designed and constructed from scratch mostly without supporting substations; plans foresee two-transformer performance and bilateral feed from the high voltage side. Only 10 of 51 are actually operating. M2 is a group of complexes designed from an existing network; only 52 of 116 complexes are in operation. Averaged probability-statistical models of M1 and M2 nets are presented, in addition to their statistical features (power, distances, separation from reserve power, voltage loss). The model 10 kv distribution net is suitable for inclusion into an electric power network currently under consideration. Figures 2; references: 3 Russian.

USSR

COMPREHENSIVE BIOLOGICAL PROTECTION OF VEGETABLE CROPS IN COVERED PLANTING

Moscow ZASHCHITA RASTENIY in Russian No 8, Aug 77 pp 18-20

BEGLYAROV, G. A., candidate in biological sciences, All-Union Scientific Research Institute for Phytopathology

[Abstract] The article surveys plant protection procedures for the some 20 million m² of greenhouses and hothouses in the USSR, which are used for growing cucumbers (80-85%), tomatoes (10%), and other vegetables. The emphasis is on research aimed at replacing chemical insecticides with biological means of control of such pests as spider mites and aphids. With low populations of aphids, the biological control was Gallica

aphridimisa, while for larger density, more voracious insects such as Chrysopidae served well as "live insecticides." Results of tests using entomofluorine fungi are reported from Latvia. Use of resistant strains of acariphags and entomophags also provided positive results. Increasing crop losses to the greenhouse whitefly and difficulties of chemical control have brought tests of Aschersonia fungi and parasites as means of biological control. Prevention of root rot of wheat, cotton and other crops has been enhanced by the use of antibiotics and fungi such as Trichoderma lignorum and Trichotecium roseum. The need for biological solutions in carefully defined localities is stressed.

USSR

UDC 633.11:631.83(571.14)

CONTENT OF METABOLIC POTASSIUM IN GRAY FOREST SOILS OF THE NOVOSIBIRSKAYA OBLAST AND EFFECTIVENESS OF USING POTASSIUM FERTILIZERS TO GROW SPRING WHEAT

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 6(36), Nov/Dec 76 pp 6-11

LANGOL'F, V. D., Novosibirsk Oblast Agrochemical Laboratory

[Abstract] A report on an agrochemical study of metabolic potassium content determined by Maslova's method in gray forest soils of the Novosibirskaya Oblast in 1965-1971. The results of the study showed that about 40% of these soils have a low and moderate content of metabolic potassium (up to 10 mg/100 g), 32% have an elevated level of metabolic potassium (10-20 mg/100 kg), and 28% have a high and very high level (more than 20 mg/100 kg). The content of metabolic potassium in gray forest soils depends on their mechanical composition. The highest concentration of metabolic potassium was found in the heavy loam of the northwest region, while the lowest content was observed in the medium loam in the Ob' region. A repeat study showed that there was a reduction of metabolic potassium in gray forest soils with inadequate application of potassium fertilizers. The greatest changes took place in the Maslyaninskiy Rayon, where intensive plowing increased the area of soils with low and moderate content of metabolic potassium by a factor of 1.5. Therefore, potassium fertilizers should be extensively applied here to maintain soil fertility. The optimum dose of potassium fertilizers to grow spring wheat on dark gray forest soil is 30 kg/ha against a background of N₃₀P₃₀₋₄₀. It is economically inadvisable to increase the dose of K₂O to 90 kg/ha. Introducing potassium chloride in an amount of 0.5 centner per hectare against a background of 1 centner of ammonium nitrate and 1.3 centners of double granulated superphosphate raised the yield of wheat by 1.8 centners per hectare. The pure income from using potassium fertilizers was 8.74 rubles per hectare, and profitability was 262%. The use of potassium fertilizers against a background of N₃₀P₃₀₋₄₀ on dark gray forest soils has no appreciable effect on the protein content of spring wheat grain. Figure 1; references: 4 Russian.

USSR

UDC 633:11:631.521(571.6)

RESULTS OF INVESTIGATION OF SAMPLES OF SPRING WHEAT OF THE WORLD-WIDE COLLECTION OF THE ALL-UNION SCIENTIFIC RESEARCH INSTITUTE OF PLANT GROWING UNDER THE CONDITIONS OF THE FAR EAST

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 6(36), Nov/Dec 76 pp 12-17

SHINDIN, I. M., candidate of agricultural sciences, KONECHNYY, V. M., candidate of agricultural sciences, KONECHNAYA, V. P., candidate of agricultural sciences, KAMELINA, A. M., candidate of agricultural sciences and LYSYKH, YE. G., Far Eastern Scientific Research Institute of Agriculture

[Abstract] A report on research to select and develop intensive and semi-intensive grades of spring wheat with genetic potential for a yield of 50-60 centners per hectare in the Far Eastern Territories of the Soviet Union. The work was done at the Far Eastern Scientific Research Institute of Agriculture on about 2,000 specimens of spring wheat from 50 nations of the world taken from the collection of the All-Union Scientific Research Institute of Plant Growing. The weather conditions during the test period varied considerably, at times being close to the norm, at other times with prolonged precipitation or drought. The parent plants were selected for resistance to lodging, stem height, resistance to diseases and resistance to drought. The Soviet standard variety was Monakinka. A table is given summarizing the main physical and chemical characteristics of eleven promising varieties for growing under the conditions of the Far East.

USSR

UDC 581.43:633.11:631.8

INFLUENCE OF PREDECESSORS AND FERTILIZERS ON THE FUNCTIONAL ACTIVITY OF ROOTS OF WINTER WHEAT IN CONNECTION WITH HARVEST FORMATION AND GRAIN QUALITY

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian Vol 9, No 4(49), Jul/Aug 77 pp 352-358 manuscript received 6 Apr 76

KURKINA, V. M., NIKOLAYEV, YE. V. and TUNIK, G. N., Crimean Agricultural Institute imeni M. I. Kalinin, Simferopol'

[Abstract] The authors investigate the functional activity of the roots of winter wheat under the influence of preceding crops and fertilizers in rotation and show how this activity is related to formation of the harvest and to grain quality. The study was done over a four-year period with nine-field crop rotation. Despite differences in meteorological conditions, indices of root activity and yields from year to year, the pattern observed was similar, and therefore the results could be averaged over the four-year period. It was found that wheat plants with fallow included among

the predecessors (maize, sunflowers, winter wheat). This is due to the "drying" action of preceding crops, especially sunflowers. Calculations showed that the root system "works" harder in dry soil. The synthesizing activity of the roots was determined from the amount of amino acids in the sap. It was found that the amino acid content is higher when crop rotation includes fallow. The intensity of synthesis (ratio of synthesized amino acids to root weight) also improves when fallow is included among the predecessors of the crop. The results of the studies show that fertilized plants make more economic use of water than when fertilizer is not used. In the case of fallow predecessors, fertilizer reduces the size of the root system and increases the amount of sap per unit of root weight, while the opposite is true when there is no fallow predecessor. Fertilizer and fallow reduce the content of amino acids in the sap, but increase the intensity of synthesis. It is concluded that high doses of fertilizer should be used when crop rotation does not include fallow. By this technique and by including fallow in the crop rotation system, the synthesis of amino acids can be activated and the crop yield can be increased for winter wheat in the Crimea. Figures 2; references: 19 Russian.

USSR

UDC 631.3:661.185

ESTABLISHMENT OF CRITERIA FOR EVALUATING DETERGENTS USED IN CLEANING FARM EQUIPMENT

Moscow IZVESTIYA TIMIRYAZEVSKOY SEL'SKOKHOZYAYSTVENNOY AKADEMII in Russian No 5, 1977 pp 181-187 manuscript received 8 Dec 76

DEGTEREV, G. P., Department of Electrification of Agricultural Production, Agricultural Academy imeni K. A. Timiryazev

[Abstract] A scheme is presented of a device used in the evaluation of the effectiveness of detergents in removing tarry residues--such as are produced by a diesel motor--from steel disks, and the consequent mathematical evaluation of the cleaning process. At 70° the synthetic detergents MS-8 and MS-5 showed the greatest effectiveness in removing the asphalt-tar deposits; labomid 203 [transliteration] and MS-6 were less effective, and labomid 101 was comparatively inferior to the other detergents. Figures 3; references: 13 Russian.

Biochemistry

USSR

UDC 577.156

MODIFICATION OF ALPHA-CHYMOTRYPSIN USING SOLUBLE CARBOXYMETHYLCELLULOSE
AND SORPTION IMMOBILIZATION OF CMC-CHYMOTRYPSIN

Moscow BIOKHIMIYA in Russian Vol 42, No 9, Sep 77 pp 1674-1681 manuscript
received 14 Jan 77

KINSTLER, O. B., and KOZLOV, L. V., Institute of Wood Chemistry, Academy
of Sciences Latvian SSR, Riga; Institute of Bioorganic Chemistry imeni
M. M. Shemyakin, Academy of Sciences USSR, Moscow

[Abstract] This is an extension of earlier studies of alpha-chymotrypsin
as an insoluble carboxymethylcellulose (CMC) and of modified, soluble CMC-
chymotrypsin. The soluble CMC-chymotrypsin was prepared, in the present
work, by the azide method from alpha-chymotrypsin (Olainskiy Chemical Reagent
Factory) and CMC (Institute of Wood Chemistry, Academy of Sciences Latv SSR).
Activity of the soluble CMC-chymotrypsin was assayed on ATEE (N-acetyl-L-
tyrosine ethyl ester); rate of hydrolysis (of 2 mM ATEE at 25°) was shown to
be a function of pH, the optimum pH being on the alkaline side, 8.3. The pH
optimum for alpha-chymotrypsin is 7.8 and for insoluble CMC-chymotrypsin,
8.8. Stability of the soluble CMC-chymotrypsin to heat denaturation was
then compared to the stability of an insoluble CMC-chymotrypsin, earlier
prepared. Stability compared favorably; the soluble form was found to con-
tain two portions varying with respect to heat denaturation, a "labile"
and a "stable" fraction. The modified CMC-chymotrypsin can be absorbed on
anionites, e.g., DEAAC (DEAE cellulose, Whatman) and DEAE sephadex A-50,
with retention of activity. DEAAC-CMC-chymotrypsin hydrolysis of ATEE
showed the optimum pH is also 8.3; hydrolysis kinetic constants for it, for
CMC-chymotrypsin are similar. The DEAAC-CMC-chymotrypsin retains its
enzymatic action against a high molecular weight substrate casein. The
CMC molecule portion of the soluble CMC-enzyme serves to avoid steric
hindrance in hydrolysis of high Mw substrates. The immobilized soluble
enzyme can be useful for laboratory and industrial applications. Figures
8; references 22: 16 Russian, 6 Western.

USSR

UDC 547.963.3

KINETIC STUDY OF SOME METHYLASES OF NORMAL AND
CANCEROUS TISSUES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 236, No 3, Sep 77 pp 755-
758 manuscript received 13 Jun 77

DEYEV, V. A., VENKSTERN, T. V. and BAYEV, A. A., academician, Institute of
Molecular Biology, Academy of Sciences USSR, Moscow

[Abstract] Differences in the activity of the tRNA methylase in normal
(kidney) and cancerous tissue (RA carcinoma) may be more quantitative than
qualitative. To learn the causes of the apparent greater tRNA-methylase
activity of cancerous tissues, determination was made of the constants of
affinity of the two tRNA-methylases to corresponding substrates, namely
tRNA and SAM, i.e., S-adenosyl-(methyl¹⁴C)-L-methionine. Determination
was also made of the apparent constant of affinity to a natural inhibitor
of tRNA-methylase, namely, SAH--S-adenosyl-L-homocysteine (which is derived
from SAM by transfer of methyl groups of SAM to various natural acceptors).
The tRNA-methylases were isolated from the respective tissue supernatants
by (NH₄)₂SO₄ salting out. Yeast tRNA₁^{val} was the substrate used in the
experiments. The quantity of ¹⁴CH₃ included into tRNA₁^{val} was assayed by a
method previously described, and by the Intertechnique counter SL-30. Cal-
culation was made of the amount of radioactive marker in M¹Ade and m⁵Cp
(products of acid hydrolysis of tRNA₁^{val}). Data obtained were used to con-
struct Lineweaver-Burke graphs. Earlier work is cited on two methylases of
the kidney and RA cancer tissues, viz., m¹A-methylase and m⁵C-methylase.
Values of the constants of affinity of the various tRNA-methylases, from
different sources, to tRNA of various specificity, are seen to be within the
limits from 10 to 0.71 mcM. Differences in absolute values of K_M are dis-
cussed. Reference is made to indirect data that suggest the metabolism of
methionine in normal tissues is substantially different from that in can-
cerous tissues. Figures 2; references 16: 6 Russian, 10 Western.

USSR

UDC 577.3

KINETIC MODELS OF ELECTRON TRANSPORT IN BIOLOGICAL SYSTEMS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 236, No 3, Sep 77
pp 748-751 manuscript received 31 May 77

VARFOLOMEYEV, S. D. and BEREZIN, I. V., corresponding member, Academy of
Sciences USSR, Moscow State University imeni M. V. Lomonosov

[Abstract] Study of energy processes in biological systems requires,
perforce, examination of physical chemical mechanisms of electron trans-
port in the systems. The present article reports work on the study,

comparison and delimitation of kinetic models of biological electron transport. At least two models can be described: i) transfer of electrons in a system of homogeneously distributed carriers; ii) transfer of electrons based on chains of structurally associated carriers. These two models have been used to make a kinetic analysis of a stationary process of electron transport. Data are presented on the stationary rate of oxidation of NAD-H by oxygen as a function of the stationary degree of reduction of the various carriers of the electron-transporting chain in submitochondrial particles. The chain of electron transport in mitochondria functions, according to kinetic analysis, as a complex of 9 to 12 electron carriers. Figure 1; references 4: 3 Russian, 1 Western (the latter is apparently from Soviet authors).

USSR

UDC 577.158.52

EFFECT OF NUCLEOPHILS ON KINETIC PARAMETERS OF PEROXIDASE-CATALYZED OXIDATION REACTIONS

Moscow BIOKHIMIYA in Russian Vol 42, No 9, Sep 77 pp 1577-1584 manuscript received 24 Nov 76

UGAROVA, N. N., LEBEDEVA, O. V., KURILINA, T. A. and BEREZIN, I. V., Department of Chemical Enzymology Moscow State University imeni M. V. Lomonosov

[Abstract] The study investigated the effect of imidazole on oxidation of potassium ferrocyanide and o-dianisidine, the former at pH values of 5.0, 7.0, and 9.0, and the latter in a pH range of 3.7-9.0. It was shown that the Michaelis-Menten equation could be used to determine functions of imidazole concentrations. Results indicated that imidazole did not serve as a activiser below pH of 6.5, but above that value it speeded peroxidase oxidation of o-dianizidine. Additional formulas were used to determine the activation constant K_A and the alpha value. Imidazole had no effect on ferrocyanide peroxidation. Results indicated that the bonding centers for o-dianisidine for catalytic and adsorptional functions are dispersed spacially. The precise relationship between imidazole and peroxidase was not clearly determined. Figures 4; references 11: 2 Russian, 9 Western.

USSR

UDC 577.15.08

INVESTIGATION OF THE POSSIBILITIES OF A KINETIC SPECTROPHOTOMETRIC DETERMINATION OF GLUCOSE CONCENTRATIONS

Moscow BIOKHIMIYA in Russian Vol 42, No 9, Sep 77 pp 1631-1636 manuscript received 28 Dec 76

BEREZIN, I. V., RABINOVICH, M. L. and SINITSYN, A. P., Chemistry Faculty, Moscow State University imeni M. V. Lomonosov

[Abstract] A reliable method to assay small concentrations of glucose in the presence of cellobiose is described. A glucosoxidase-peroxidase reagent was mixed with test samples in cuvettes, then α -dianisidine was added to cause oxidation. The concentration of hydrogen peroxide formed was recorded on a tape moving at 0.1 cm/sec. Results indicated that the rapidity of color increase was in proportion to the glucose concentration of the particular sample, up to an upper limit of $1.7 \cdot 10^{-3}$ M, or 0.3 mg/ml. At higher concentrations there was a divergence from direct proportionality, perhaps explainable by a shortage of available oxygen for the oxidation of the glucose. Further tests determined that this spectrometric procedure could measure only 67% of total beta-D glucose. Quantities of enzymes required for sensitivity of the procedures were established. Since the method requires large amounts of glucosoxidase, an alternative method using immobilized enzymes is suggested. Figures 3; references 11: 4 Russian, 7 Western.

USSR

UDC 576.8:577.15.03

INVESTIGATION OF THE EFFECT THAT SOME CHEMICAL COMPOUNDS HAVE ON THE LIBERATION OF INVERTASE FROM YEAST WITH ENZYMATIC ACTION

Minsk VESTSI AKADEMII NAVUK BSSR, SERYYA BIYALAGICHNYKH NAVUK in Belorussian No 2, 1977 pp 59-62

SHKLYAR, B. KH., candidate of biological sciences, MATULAYTSITE, YE.YU., candidate of biological sciences, LABANOK, A. G., candidate of biological sciences, GREBENKO, V. V. and SHUKAN, L. A., candidate of biological sciences, Institute of Microbiology, Academy of Sciences BSSR

[Abstract] An investigation is made of the effect that certain reducing agents (cysteine-HCl, β -mercaptoethanol, dithiothreitol), chelating (EDTA) and surfactant (sodium deoxycholate, sodium lactate, Tween-40) purifying compounds have on the liberation of invertase from untreated and acetone-treated yeast Sacch. cerevisiae XI when the latter are subjected to the action of protease, lysing glycosidase, β -glucanase and saccharomycetolytic enzymatic actocynerase. It is shown that the greatest amount of

invertase is liberated from untreated yeast with enzymatic action in the presence of mercaptoethanol and dithiothreitol, while those treated with acetone yield the maximum amount of invertase in the presence of cysteine-HCl. References 11: 5 Russian, 6 Western.

USSR/GUINEA

UDC 616.155.3 (213.5)

LEUKEMOID REACTIONS OF PERSONS RESIDING IN TROPICAL REGIONS

Moscow PROBLEMY GEMATOLOGII I PERELIVANIA KROVI in Russian Vol 22, No 7, 1977 signed to press 5 Nov 76 pp 52-53

SHILKINA, N. P., Department of Propediatrics of Internal Diseases, Yaroslavl' Medical Institute

[Abstract] A study of the blood composition of 2333 persons hospitalized in Conakry, Republic of Guinea, showed that quantitative changes of formed elements of the blood appeared most frequently with a combination of qualitative and quantitative shifts due to leukemoid reactions noted in 78 (3.7%) of the patients. Leukemoid reactions during malaria and sickle-cell anemia appeared during the more severe stage of the disease and were registered for 2-3 weeks, while leukemoid reactions during other diseases were found much less frequently. In 54.1% of the patients with eosinophilia there was no shift of the eosinophilic series to the left with normal or reduced number of leukocytes. Parasites caused 84.4% of the eosinophilia cases. Lymphocytosis and monocytosis without appearance of prestages of these cells was seen in 950 cases (42.6%). A study of the functional state of the blood cells, during different leukemoid reactions, by cytochemical methods showed a significant increase of RNA level in the period of the hemolytic crisis during sickle cell anemias showing the intensity of immune reaction in this period; cytochemical studies are necessary in these states. Reference: 1 Western.

USSR

UDC 611.36-018.1-013-08:616-006-02]-092

BENZ(A)PYRENE METABOLISM IN A CULTURE OF HUMAN EMBRYO LIVER CELLS

Leningrad VOPROSY ONKOLOGII in Russian Vol 23, No 6, 1977 pp 69-73

BELITSKIY, G. A., ERAYZER, T. L., GRINBERG, K. N. and KHESINA, A. YA.,
Laboratory of Chemical Carcinogenesis of the Oncology Scientific Center,
Academy of Medical Sciences USSR; Laboratory of Human Cytogenetics of the
Institute of Medical Genetics, AMS USSR

[Abstract] Primary cultures of liver cells of 10-12 week old embryos were used in a study of the activity of microsomal oxidases in cultures of liver cells of human embryos by their capacity to metabolize carcinogenic polycyclic hydrocarbons of benz(a)pyrene. Liver cells cultivated in monolayer form preserved the capacity to metabolize the carcinogenic hydrocarbon benz(a)pyrene. The intensity of metabolism is much higher in the early stages of cultivation than in cultures of fibroblasts of the same embryo. Later it is equalized due to reduction of metabolic activity of liver cultures. The data showed that the system of non-specific oxidases functions in embryonal hepatocytes of man, cultivated in vitro in the monolayer form. This indicates that activation of "carcinogenic" agents, including hydrocarbons, as well as hepatotropic carcinogens, will proceed in them.

Figures 3; references 14: 5 Russian, 9 Western.

Biophysics

USSR

UDC 616-009-092-08:615.849.19]:612.017

IMMUNE RESPONSE OF THE BODY DURING LASER IRRADIATION OF EXPERIMENTAL TUMORS

Leningrad VOPROSY ONKOLOGII in Russian Vol 23, No 6, 1977 pp 65-68

SKACHKOV, A. P., MOSKALIK, K. G. and LAZO, V. V., Scientific Research Institute of Oncology imeni N. N. Petrov, Academy of Medical Sciences USSR

[Abstract] Male SHR and C57Bl mice were examined for the number of antibody forming cells in the spleen and the level of auto-antibodies in blood serum after laser irradiation of Garding-Passy or B-16 melanoma tumors transplanted subcutaneously in the rear extremities or only one extremity. Animals with laser irradiated tumors revealed an increase of number of antibody forming cells and an increase in the blood serum of the level of antibodies directed against antigens of these irradiated tumors and also of the liver and kidneys of these animals. Some increase of these indicators was observed after irradiation of normal tissues. The increase of immunological reactivity of the body as a result of laser therapy of tumors, evidently, plays a definite role in the anti-tumoral action of laser irradiation. Figure 1; references 19: 9 Russian, 10 Western.

USSR

UDC 612.826.53

EFFECTS OF LOCALIZED TEMPERATURE ELEVATION IN THE PREOPTIC HYPOTHALAMIC AREA ON BIOELECTRIC BRAIN ACTIVITY IN THE RABBIT

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IM. I. M. SECHENOVA in Russian No 9, 1977 pp 1268-1274 manuscript received 26 Feb 77

YAICHNIKOV, I. K., Department of General Pathology, Institute of Experimental Medicine, Academy of Medical Sciences USSR, Leningrad

[Abstract] Experiments were conducted on 28 wakeful rabbits in which the preoptic anterior hypothalamic area was heated to +1.0 to + 6.0° above normal temperature to evaluate the effects on the EEG. The results showed that raising the temperature by +3.0° was without effect, while an increase of +6.0° led to desynchronization of the EEG. Further, mildly desynchronized EEG recordings showed synchronization on heating to +1.0 to +2.0° depending on the environmental factors initiating desynchronization. The threshold for thermally-induced desynchronization was 1.5-2-fold greater than for cooling-induced desynchronization. Figures 2; references 9: 6 Russian, 3 Western.

Epidemiology

USSR/USA

UDC 576.858.75.095.38:598.2(477.81)

ISOLATION OF STRAINS IDENTICAL TO INFLUENZA A/ENGLAND/42/72 VIRUS FROM SEMI-SYNAUTHROPIC SPECIES OF BIRDS IN ROVNO OBLAST, UKRAINIAN SSR

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 77 pp 414-418
manuscript received 17 May 76

SHABLOVSKAYA, YE. A., L'VOV, D. K., SAZONOV, A. A., WEBSTER, R. G.,
VINOGRAD, I. A., BRAUDE, N. A., STEL'MAKH, S. G., PORTYANKO, N. V.,
KOVALCHUK-IVANYUK, T. V. and SOKOLOVA, N. N., Scientific Research Institute
of Epidemiology and Microbiology, Ministry of Health Ukrainian SSR, L'vov,
Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences
USSR, Moscow and St. Judes Children's Research Hospital, Memphis Tenn. USA

[Abstract] Influenza virus with the antigenic formula G3N2 was isolated from semi-synanthropic birds shot near villages in the Rovno region. Nine to ten day chick embryos were used in studying 45 tracheal and 45 cloacal washings made with penicillin and streptomycin-containing medium. Hemagglutinating agents were identified with commercial sera and confirmed with hemagglutinin and neuraminidase reference sera. Identification was further confirmed in the US after concentration and purification by chick erythrocyte adsorption and sucrose density gradients. Both A/wagtail/Ukraine/107/74 and A/dove/Ukraine/111/74 were isolated from tracheal washings, demonstrated to have the antigenic formula G3N2 and subjected to the double immunodiffusion gel reaction, which showed that the viruses were antigenically very close to A/England/42/72, as did neuraminidase typing. The data are direct evidence for the possibility of epidemic viruses circulating among small birds. Figures 1; references 24: 14 Russian, 10 Western.

USSR

UDC 576.858.25.095

BIOLOGICAL PROPERTIES OF A KEMEROVO GROUP ARBOVIRUS ISOLATED IN TRANS-CARPATHIA

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 77 pp 456-459 manuscript
received 23 Nov 76

VINOGRAD, I. A., VIGOVSKIY, A. I., GAYDAMOVICH, S. YA. and OBUKHOVA, V. R.,
L'vov Scientific Research Institute of Epidemiology and Microbiology,
Ministry of Health, Ukrainian SSR, Institute of Virology imeni D. I.
Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] The nature of the Mircha arbovirus isolated in 1972 from Ixodes ricinus L ticks from cows pastured in the Ukraine was studied. The virus produced flaccidity, disturbed coordination, convulsions, paralysis and death in newborn white mice and rats when introduced by intracerebral and

intraeritoneal routes, but not subcutaneously. Mice, rats and guinea pigs older than three weeks were not affected, though the virus persisted in the mice for 3 months and their serum could infect newborn mice. The virus was successfully cultivated on 6-8 day chick embryos inoculated in the yolk sac and on chick fibroblast culture. Ethyl ether, sodium desoxycholate, low temperature and lyophilization had little effect on it. Serological typing using immune ascitic fluid gave positive results only for Kemerovo and Tribech groups and showed Mircha to be almost identical to Tribech. The Mircha virus exerts a marked immunodepressant effect on adult rats, inhibiting the formation of immunocompetent cells when administered with sheep erythrocytes. References 21: 12 Russian, 9 Western.

USSR

UDC 616.988.75-036.22(47+57)"1976-1977"

INFLUENZA EPIDEMIC OF WINTER 1976-1977--EDITORIAL NOTE

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 77 pp 507-508

[Abstract] An influenza epidemic occurred in the USSR, starting in the end of October 1976 in Central Asia and Murmansk and spreading to most large cities in the last two weeks of 1976 and the first two weeks of 1977. The peak of infection occurred 4-5 weeks after the start of the epidemic, at which time 1.6-5.5% of the population was infected. In most cities the infection rate did not return to normal seasonal levels until the second half of February. Both strains A and B were involved, with most isolates closest to B/Hong Kong/75 and some to A/Victoria/3/75.

Immunology

USSR

UDC 615.371:576.858.75].012.6(047)

USE OF THE GENETIC RECOMBINATION METHOD FOR PRODUCTION OF INFLUENZA VIRUS VACCINE STRAINS

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 77 pp 387-395
manuscript received 8 Oct 76

ALEKSANDROVA, G. I., Department of Virology, Institute of Experimental Medicine, Academy of Medical Sciences USSR, Leningrad

[Abstract] The progress made toward preparing influenza vaccine using the genetic recombination method is reviewed. The method for obtaining recombinant strains for inactivated vaccine, including the crossing of strains with new antigen with old vaccine strains which reproduce well on chick embryo and the isolation of the product on chick embryo cultures containing antiserum against the old strain are discussed. Attenuated recombinants were used for live antiinfluenza vaccine against H3N2 variants. The Alice vaccine used in the USA, England and France showed a seroconversion rate of 60-80%. Attenuation donor strains used include A/PR8/38 and A/Okuda/57; recombinants vary considerably in degree of virulence retained. Production of heat-sensitive variants of epidemic viruses via cold adaptation and their use in vaccine are reported. These nonvirulent strains have been crossed with virulent epidemic strains, producing promising "cold" recombinants for vaccine production. Virulent and attenuated strains can be accurately differentiated in the laboratory by the lower limiting temperature. Results of a complement-recombinant study of heat-sensitive mutants are considered. References 46: 4 Russian, 42 Western.

USSR

UDC 616.988.25-092.9-085.37

INFLUENCE OF THE POLY-I POLY-C COMPLEX WITH POLY-L-LYSINE ON EXPERIMENTAL TICK-BORNE ENCEPHALITIS

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 77 pp 438-441
manuscript received 4 Nov 76

BURGASOVA, M. P., ANDZHAPARIDZE, O. G., BEKTEMIROV, T. A., BOGOMOLOVA, N. N. and BORISKIN, YU. S., Moscow Scientific Research Institute of Viral Preparations

[Abstract] The effect of the interferon-inducing complex of poly-I-poly-C with poly-L-lysine and carboxymethylcellulose on the development and course of experimentally-induced Pan strain tick-borne encephalitis was studied in Macaque rhesus monkeys. The inducer was administered 6-8 hours before infection, after three and eight days for four animals and daily for 6 days for two animals. Interferon titers, determined in diploid human embryo epithelial-muscle tissue, varied from 1:64 to 1:4096 after inducer

administration and body temperature increased 0.5-1.5° in the first 4-7 hours, but returned to normal in 14 hours. The three time treatment reduced animal mortality and severity of symptoms, while daily treatment was much less effective. Neither poly-I-poly-C or its complex with poly-L-lysine affected production of infectious virus or antigen in HEp-2 cell culture, as determined by immunofluorescence. Figures 1; references 9: 6 Russian, 3 Western.

USSR

UDC 576.858.095.383.098.396

ISOLATION AND CHARACTERIZATION OF MESSENGER RNA FOR ANTIVIRAL PROTEIN

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 77 pp 441-445 manuscript received 16 Aug 76

YERSHOV, F. I., SOKOLOVA, T. M., TAZULAKHOVA, E. B., NOVOKHATSKIY, A. S. and VERKHADSKAYA, A. A., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] In order to isolate and characterize the antiviral protein m-RNA, primary trypsinized chick embryo fibroblast and L-1210 transplanted mouse cell cultures were treated with interferon to induce antiviral protein production. The m-RNA was isolated by treatment with phenol with or without chloroform and precipitation with ethanol containing NaCl. M-RNA translation in actinomycin D treated cells was determined by the infectiousness of Venezuelan equine encephalitis or vesicular stomatitis virus. The development of viral resistance coded by antiviral protein m-RNA was already considerable after one hour and reached a maximum at six hours. The three hour lag observed with interferon treatment was not found. Sucrose Sucrose density gradient centrifugation showed that the mRNA had zones of activity higher than 23S and between 13 and 17S, as did that isolated from the poly A containing fraction. The mRNA formed by chicken, mouse, monkey or human cells protected many of the others equally well. Figures 2; references 14: 6 Russian, 8 Western.

Industrial Toxicology

USSR/BULGARIA

UDC 613.633:669.162.143

SEPARATE QUANTITATIVE ASSAY OF QUARTZ PRESENT IN LOW AMOUNTS IN INDUSTRIAL DUST

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9,
Sep 77 pp 57-58 manuscript received 15 Oct 75

DOBREVA, M. and LUKANOVA, R., Center for Hygiene, Medical Academy,
Sofia, Bulgaria

[Abstract] Physical and chemical methods of assay of quartz in industrial (coal, minerals) dust give errors when the samples contain only small quantities. The present article reports trial of a microchemical method utilizing a mixture composition, and an infrared technique to assay small quantities of quartz in samples of silicate compound dust. The mixture composition test involves potassium salt melt solubilizing of the quartz-containing sample (e.g., of pyroxene, nefelin, chrysocolla, olivin or deposit); the IR method employed a Perkin-Elmer IR-spectrophotometer at $710-680\text{ cm}^{-1}$ after preliminary treatment of the sample with HCl and HNO_3 . The results from these two methods compare favorably with the pyrophosphoric acid assay method. References: 5 Western.

USSR

UDC 613.63:613.155.3:547.588.1

HYGIENIC STANDARDIZATION OF CONTENT OF TRIPHENYLPHOSPHITE IN THE ATMOSPHERE OF INDUSTRIAL PREMISES

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9,
Sep 77 pp 55-57 manuscript received 25 Mar 76

BOL'SHAKOV, A. M. and BARANOV, V. I., Moscow First Medical Institute

[Abstract] Establishment of maximum permissible levels (MPL) of triphenylphosphite (TPP) for work places is reported. TPP is used as an industrial antioxidant and stabilizer. Toxicology of the compound is studied in white mice and rats; the clinical features, pathology and biochemistry of TPP poisoning are listed. The MPL for TPP (mixture of vapors and aerosol) is recommended at 0.1 mg/m^3 . References: 2 Russian.

USSR

UDC 613.633:(615.212.3:547.546.3

MATERIAL ON THE SUBSTANTIATION OF MAXIMUM PERMISSIBLE LEVEL (MPL) OF PHENACETIN DUST IN THE ATMOSPHERE OF A WORKING ZONE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9, Sep 77 pp 53-55 manuscript received 23 Jan 76

VASILENKO, N. M., NAYMANOVA, R. M., BATURINA, T. S., PRASOL, S. D., KOL'TSOV, V. A. and OKSENYUK, I. M., Institute of Labor Hygiene and Occupational Diseases, Kharkov

[Abstract] The chemical structure, medical and industrial uses, metabolism, and toxicology of phenacetin (PA) are briefly listed, note being made that little attention has been given to it as an injurious industrial product. The present report describes clinical findings (neurological and ENT changes, tendency to leucopenia and reticulocytosis) in patients exposed to 0.6-4 mg/m³ concentrations of PA and efforts to establish an MPL for the substance. Trials were carried out on rats and mice, using intragastric, skin, and PA-containing dusty air administration. PA is mildly toxic and the body becomes habituated to it upon repeated ingestion. Thresholds of acute and chronic toxicity for PA dust are 24 and 2 mg/m³. The level of 0.5 mg/m³ of PA dust is recommended as the MPL. References 20: 9 Russian, 11 Western.

USSR

UDC 613.63:621.34.013.19+613.644):621.431.74

SOME FEATURES OF BODILY REACTIONS OF MOTOR MECHANICS TO SHORT DURATION ACTION OF EXHAUST GASES IN COMBINATION WITH THE ACTION OF NOISE AND VIBRATION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9, Sep 77 pp 46-48 manuscript received 26 Oct 76

BUKHARIN, YE. A., VLADIMIROV, V. N. and SVISTUNOV, N. T., Leningrad

[Abstract] The subjects of the study are ship motor specialists who are exposed to increased levels of noise and vibration and, at times, high temperature and toxic components—oxides of nitrogen and carbon—of intermittent exhaust gases. Extensive work is cited on these factors of the environment; evaluative studies on the intensifying action of the combination of the factors are less often found in the literature. The motor mechanics selected on two similar vessels; the first 21 days on board were identical with respect to environmental factors, but on the 22nd day exhaust gases in one of the vessels contaminated the ship quarters. Concentrations of carbon monoxide in the latter vessel varied from 5-10 mg/m³ and of nitrogen oxides 10-20 mg/m³; the gas composition in the other ship was unaffected. The functional condition of the subjects (e.g., in terms

of pulse, systolic and diastolic pressures, pulse acceleration in an orthostatic test, resistance to static force, Landolt ring correction test, sensomotor reaction) was tested initially, on the 21st day, and on the 22nd day. Data are tabulated to support finding of central-nervous, cardiovascular and neuromuscular effects of the exhaust gas factor, lending emphasis to the changes due to noise and vibration alone. The short-term action of the gases apparently did not affect the hearing analyzer.

References 13: 11 Russian, 2 Western.

USSR

UDC 613.644:613.646

SUBSTANTIATION OF A PERMISSIBLE LEVEL OF SOUND IN COMBINATION WITH ELEVATED ENVIRONMENTAL TEMPERATURE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9, Sep 77 pp 41-43 manuscript received 10 Aug 76

ZVEREVA, G. S., RATNER, M. V., KOLGANOV, A. V. and MAR'ENKO, L. V., Institute of Labor Hygiene and Occupational Diseases, Donetsk

[Abstract] An experiment was set up in a sealed room to examine the effect of conditions in a rolling mill--exposure to intermittent noise, heat--in order to set forth permissible levels of sound in conjunction with heat. A recording tape duplicated the factory noise. Subjects were 8 volunteers, 20-25 years, who had not adapted to the noise; these were subjected to noise alone and in combination with nervous-tension work and elevated air temperature. In the experiment the temperature was maintained at 22° or 29°. Evaluation of the effect of short-term noise examined the effect on response to sound and light, muscular resistance to static force, concentration of attention, EKG, and thermometry. The maximum permissible level (MPL) of sound is selected as 75 db A, when the noise is short-term fluctuating within 5 db, resonance 0.1 to 0.8 s, pause 0.1 to 2.8 s, time buildup of forward front, from 30 to 200 ms. When the short-term noise is in conjunction with the elevated (28-30°) temperature and mental labor, the body is more unfavorably affected than by noise alone; the MPL will then be 70 db A. Figures 2; references 10: 8 Russian, 2 Western.

USSR

UDC 615.916'126.51.015.4:612.17

CLINICAL AND EXPERIMENTAL STUDY OF THE CONDITION OF THE HEART UNDER PROLONGED ACTION OF CARBON DISULFIDE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9, Sep 77 pp 37-40 manuscript received 1 Apr 76

SAYTANOV, A. O., GRODETSKAYA, N. S., TUTNOVA, A. V. and KONOVOVA, A. M., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

[Abstract] Study was made of the functional changes which appear in the myocardium of patients affected by exposure to carbon disulfide. Patient records of the authors' Institute were examined: of 264 cases of chronic CS₂ intoxication, 71 had signs of myocardial dystrophy; some had been exposed to 5-6 times (prior to 1967) others to 2-3 times (later years) the permissible levels of CS₂ concentration. Most were women, 31 to 45 years, who had worked for a long time, over 10 years, under the conditions. Controls were 141 healthy workers of another, non-chemical plant, and 25 patients with chronic CS₂ intoxication but no myocardial dystrophy. Long-duration exposure to CS₂, in concentrations of 30 mg/m³, produced evidence of myocardial dystrophy which was of a reversible nature and which did not cause ischemia infarct, or heart decompensation. Functional loads (e.g., orthostatic, physical) were used to indicate that the myocardial changes were associated with disturbances of neuroendocrine regulation and electrolyte and fat metabolism. Evidence of a non-coronariogenic nature of the myocardial changes was supported by studies on male rats, 250-300 g, which had been exposed to 4 months of action of CS₂ (100, 10, and 1 mg/m³). Nine months after completion of the exposure, cardiosclerotic changes were seen in the animal myocardium, with no evidence of hypertrophic or hyperplastic changes in the myocardium. References 6: 3 Russian, 3 Western.

USSR

UDC 613.644-07:612.824

INFLUENCE OF INDUSTRIAL NOISE ON BRAIN CIRCULATION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9, Sep 77 pp 12-16 manuscript received 9 Mar 76

RYZHOU, A. YA., State University, Kalinin

[Abstract] Study was made under laboratory conditions of the effect of the sound level, characteristic of a weaving mill, on cerebral blood circulation in persons unadapted to such sound. Subjects were 10 women, 20-28 years, engaged in mental labor. Rheoencephalograms (REG) were recorded in both hemispheres of the brain of the subjects after they had rested 8 minutes in a reclining position; recorded also were tachooscillograms, sphigmograms

of the coronary, radial and femoral artery, arterial tone, cardiac contraction, systolic volume of blood, minute volume of blood, general peripheral resistance, threshold of aural sensitivity. The women were then subjected to 20 minutes of the noise (105 db) like that of the industrial situation. Decrease in hearing and depression of the functions of cerebral circulation were noted; vascular tone of vessels of both hemispheres was increased and reflected in REG changes. The brain vascular system was found to be resistant to the sound in individual cases. Findings were compared to those parameters recorded in women workers in the weaving industry; it was concluded that industrial noise which exceeds permissible standards is one of the causes for early constrictive changes in the cerebral vessels of women weaving workers. Figures 3; references 16: 14 Russian, 2 Western.

USSR

UDC 613.644-092.6

EXPERIMENTAL STUDY OF THE INFLUENCE OF LOW-FREQUENCY "LOCAL" VIBRATION ON THE STATUS OF PERIPHERAL BLOOD CIRCULATION, THE SKIN ANALYZER AND THE NEUROMUSCULAR APPARATUS OF THE HANDS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NNYE ZABOLEVANIYA in Russian No 9, Sep 77 pp 8-11 manuscript received 10 Feb 76

RADZYUKEVICH, T. M. and SHEYMAN, L. S., Institute of Labor Hygiene and Occupational Diseases, Gorkiy

[Abstract] While protection of man from the action of local vibration is a serious problem in hygiene, the available literature did not contain any reports on the effects on man of low-frequency, i.e., less than 16 Hz, vibrations. Such vibration is associated with use of industrial hand-tools. Studies are reported here on the influence of 8 Hz vibration on physiological systems described as affected earliest by such stimulation. The vibration was produced by an electrodynamic vibrostand, VEDES-200 A and, under oscillation speeds of 120-126 db, tested on 6 healthy males for various time periods. Changes observed depended on intensity and on time of exposure. Reliable changes due to the exposure were observed in the peripheral circulation, viz., reduced intensity in pulse blood filling in the vessels of the hand, continuing after stopping the action. The hand neuromuscular apparatus showed a decrease in the general level of tremor and changes in its spectral make-up. When the 8 Hz vibration was applied in combination with a static force of 50 N, change occurred in the direction of the vasomotor reaction and the thresholds of sensitivity to the vibration increased. Figures 3; references: 9 Russian.

USSR

UDC 612.13.014.45-055.2

INFLUENCE OF WHOLE BODY VIBRATION ON THE HEMODYNAMIC SYSTEM OF THE FEMALE BODY

Moscow GIGIYENA TRUDA I PROFESSIONAL'NNYE ZABOLEVANIYA in Russian No 9, Sep 77 pp 4-7 manuscript received 22 Jul 76

MALINSKAYA, N. N., VOLKOVA, Z. A., YEVDOKIMOVA, I. B. and FROLOVA, T. P., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

[Abstract] Increasing participation of women in mechanized jobs and as drivers of heavy duty vehicles exposes them to the problems associated with the vibrations of such heavy work, and particularly to overloading of the neurovascular and skeletal systems. The effect of wholebody, low-frequency vibration was studied in women under actual work conditions, and experimentally. Thirty healthy women, aged 21-30 with regular menstrual cycle and without pathology of the true pelvis, drivers of MTZ-50, YuMZ-6L, K-700 and DT-75 tractors were found to be exposed in their jobs to noise which exceeded a permissible (SN 1102-73) standard from 3 to 16 db, and to low-frequency vibration of 4 Hz. Examination of these women during various stages of their menstrual cycle, and of 11 healthy women--not in such jobs but who were subjected experimentally to the low-frequency vibration--revealed changes in blood supply to the brain and spinal cord, and of the organs of the true pelvis, most intense at the time of menstruation, and most pronounced in the pelvis and spinal cord. The blood changes resembled venous hypotension and venous stasis. References: 4 Russian.

USSR

UDC 616-006-02:547.814

FORMATION OF 3,4 BENZPYRENE AS A RESULT OF PYROLYSIS OF WOOD BY SUPERHEATED STEAM

Leningrad VOPROSY ONKOLOGII in Russian Vol 23, No 6, 1977 pp 83-85

DIKUN, P. P., KOSTENKO, L. D., LIVEROVSKIY, A. A., SHMULEVSKAYA, E. I., ROMANOVSKAYA, L. S. and PANKINA, YE. I., Scientific Research Institute of Oncology imeni N. N. Petrov, Ministry of Health USSR; Wood Technology Academy imeni S. M. Kirov, Ministry of Higher and Secondary Special Education RSFSR

[Abstract] Meat products processed at the Leningrad Meat Combine by "smoke" from beech chips subjected to the effect of a steam-air mixture heated to 400 degrees were studied at the Laboratory of Biophysics of NII [Scientific Research Institute] of Oncology imeni Professor N. N. Petrov showed not a single case of the presence of 3,4 benzpyrine (BP) in the processed meats.

The data obtained indicated that BP penetration into meat products processed by "smoke" obtained by pyrolysis of wood by superheated steam was no different than penetration occurring in case of meat processed by low temperature smoke generators. References 5: 3 Russian, 2 Western.

USSR

UDC 611.33-018:612.323.5-547.31

RECONSTRUCTION OF THE GASTRIC AND HEPATIC MUCOSA AFTER EXPOSURE TO AROMATIC HYDROCARBONS OF THE BENZENE SERIES

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 5, 1977 pp 38-42

BASHIROV, A. A., deceased, GUSEYNOVA, S. YU. and KARAPETOVA, YE. S., Azerbaydzhan Medical Institute im. N. Narimanov

[Abstract] Chronic exposure (6 months and 12 months) to divinyl (butadiene) had little effect on the gastric and hepatic mucosa of stockbred dogs, but similar exposure to styrene induced minor hemodynamic disturbances and degenerative changes. Chronic exposure of the animals (12 months) to both compounds simultaneously at the maximum permissible concentrations resulted in a variety of major structural and metabolic changes in the gastric and especially hepatic cells due to the development of tissue hypoxia. References: 10 Russian.

USSR

UDC 613.63:612.55

THERMOREGULATION IN WORKERS EXPOSED TO ALLYL CHLORIDE

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 5, 1977 pp 43-45

KASIMOVA, F. S., Azerbaydzhan Institute of Labor Hygiene and Occupational Diseases imeni M. M. Efendizade

[Abstract] Measurement of the skin temperature at symmetrical points on the right and left wrists of 155 workers engaged in the production of allyl chloride revealed an average temperature of 31.6° and 32.7°C, respectively, compared to 32.9° and 32.7° in controls, with a temperature asymmetry of more than 1° in 24.5 and 17.5% of the individuals in the main and control groups. The intensity of change in skin temperature was related to the length of time on the job. The average temperature of the right and left wrists (31.3° C) in individuals with more than 5 years of experience was significantly lower than in those with 1 to 2 years of experience (32.1° and 31.6° C). Temperature asymmetry in the two groups was found in 25.6 and 23.3% of the cases, respectively. These changes are not regarded as specific, for they may occur in workers exposed to other injurious agents. References: 7 Russian.

USSR

INCIDENCE OF UPPER RESPIRATORY TRACT DISEASE IN WORKERS AT A FLUORO-ORGANIC CHEMICAL PLANT

Kiev ZHURNAL USHNYKH NOSOVYKH I GOROVYKH BOLEZNEY in Russian No 3, 1977
pp 47-50

LUR'YE, A. Z. and PLESKOVA, Z. I. Medical Institute, Perm.

[Abstract] The authors studied workers in Freon 11-12, Freon 22 and Teflon shops for incidence of nose, throat and larynx diseases. A group of 58 persons from an environment not connected with production of any chemicals was used as a control. A total of 508 workers was examined. Illness among the test groups was higher than in the control group. The indices based on incidence per 100 persons were 93.4 for the workers in the Freon 22 shop and 80.3 and 79.1 for the workers in the Freon 11-12 and teflon shops, respectively. This index was 46.6 for the control group. One of the causes of the increase in the morbidity indices was "apparently" the adverse effects of the initial substances and products of hydrolysis in fluoro-organic processes in the air in the shops. Differences in the morbidity indices are accounted for by the varying content of toxic substances in the air. Incidence of disease of the upper respiratory tract, cardiovascular, and nervous systems increased steadily with length of employment in the shops. After 5 years of observation, the highest percentage of workers with the disease (66.3 percent) was in the Freon 22 shop; 43.2 percent of workers in the Freon 11-12 shop and 40 percent in the teflon shop were affected. The test methods were not described. Figure 1; references: 5 Russian.

USSR

CONDITION OF VESTIBULAR FUNCTION IN COMPRESSOR OPERATORS EXPOSED TO INFRASOUND AND CONSTANT NOISE

Kiev ZHURNAL USHNYKH NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 3, 1977
pp 54-59

DOROSHENKO, P. N., BAZAROV, V.G. and PAL'GOV, B. I., Kiev Scientific Research Institute of Biolaryngology

[Abstract] Infrasound, a significant component of industrial noise, is not considered as acoustic irritation. Since infrasound is not registered by the usual acoustic apparatus, it was measured by an infrasound gauge. The investigation considered: subjective complaints of the workers, character of their gait, occupational history, Romber's tests, indicatory test, arm deflection reaction, diadochokinetic reaction, tests for spontaneous and positional nystagmus, caloric and rotative tests, and hearing

examinations. 142 workers of industrial plants were studied for combined effect of infrasound and constant noise and also for effect of constant noise alone. Compressor operators (82 persons) were exposed to a constant sound of 84-90 db combined with infrasound of 91-113 db. The control group consisted of mechanics from shops having constant noise of 95-97 db. The compressor operators complained of ill health more often than the control group. A higher percentage of compressor operators (11.2 percent) had a partial loss of hearing as compared to the mechanics (2.5 percent). Also, cochlear neuritis appeared in 20.2 percent of the compressor operators.

Microbiology

USSR

UDC 616.36-002.14.022.6-022.369-02:615.387.014.413

EFFECT OF ULTRA-LOW TEMPERATURES ON REDUCTION OF RISK OF POST-TRANSFUSION COMPLICATIONS ASSOCIATED WITH THE SPREAD OF VIRUS HEPATITIS AND BACTERIAL CONTAMINATION OF THE BLOOD

Moscow PROBLEMY GEMATOLOGII I PERELIVANIA KROVI in Russian Vol 22, No 7, 1977 pp 36-39 manuscript received 27 Apr 76

AGRANENKO, V. A., professor, GOLOSOVA, T. V., professor, POLYAKOVA, L. P., MARGOLINA, A. N., ANIKINA, T. P. and FEDOROVA, L. I., doctor of medical sciences, Central Institute of Hematology and Blood Transfusion, Ministry of Health USSR, Moscow

[Abstract] A study of the effect of stages of blood preservation on hepatitis B antigen in the studied blood at high titers and the effect of ultra-fast freezing of the blood on vital activity of microorganisms in the blood indicated that freezing and storage of erythrocytes in liquid nitrogen for 1-3 years did not affect the HB antigen titer. The titer is a direct function of the method and the number of washings of the frozen erythrocytes from the cryoprotective solution. Washing by the cytoglomeration method in comparison with series centrifugation ensures more rapid reduction of the HB titer. Ultra-rapid freezing did not provide complete sterilization effect so blood preservation procedures should be conducted with strict observance of the rules of asepsis and antisepsis. Figure 1; references 3: 2 Russian (by Western authors), 1 Western.

USSR

UDC 576.851.5.589

POLYLYSOGENY OF CULTURES OF THE BACILLUS THURINGIENSIS VAR. GALLERIAE

Moscow MIKROBIOLOGIYA in Russian Vol 46, No 4, Jul/Aug 77 pp 730-736
manuscript received 20 Apr 77

KOCHKINA, Z. M., BLOKHINA, T. P. and RAUTENSHTEYN, YA. I., Institute of Microbiology, Academy of Sciences USSR

[Abstract] The purpose of this work was to study certain peculiarities of the phage newly discovered in a culture of bac. thuringiensis var. galleriae 1-97 and answer the question of the polylysogeny of cultures of this serotype. It is shown that the culture is polylysogenous. Earlier, the presence of a phage with an original structure of particles had been established in this culture, with a singular substructure referred to as a "collar." This phage is described in detail as a phage of bac. thuringiensis 1-97. Further study of a culture of bac. thuringiensis var. galleriae 1-97 has shown that in addition to this phage 1-97 with collar, it also contains another phage, which differs sharply from the first in morphology of particles, spectrum of lytic action and many other properties. Electron

microscopy of the culture fluid of a number of different cultures of bac. thuringiensis var. galleriae has shown that they also contain various quantities of the particles of both of the morphologic types found in strain 1-97. The data produced indicates that cultures of bac. thuringiensis var. galleriae are polylysogenous. Methods are described for separation of the newly discovered phage. Figures 7; references 13: 11 Russian, 2 Western.

USSR

UDC 576.851.4.095

CORRELATION OF THE SYNTHESIS OF EXTRACELLULAR PROTEASE WITH THE SYNTHESIS OF THE RED PIGMENT PRODIGIOSINE IN SERRATIA MERCESCENS

Moscow MIKROBIOLOGIYA in Russian Vol 46, No 4, Jul/Aug 77 pp 647-650
manuscript received 29 Oct 75

LORIYA, ZH. K., BRYUKNER, B., YEGOROV, N. S., Department of Microbiology, Biology Faculty, Moscow State University

[Abstract] A study is presented of the possible correlation between the synthesis of prodigiosine and protein of extracellular protease by S. Marsescens VI. The bacteria were grown on a rocking machine (220 os/min) at 30 C. A correlation was found between the synthesis of extracellular protease and the synthesis of prodigiosine. Induction of the synthesis of protease by leucine causes the formation of the pigment. On a synthetic medium with norvaline and D-leucine as effective enzyme synthesis inducers, intensive formation of prodigiosine was observed. On the other hand, repression of the synthesis of the enzyme, regardless of the composition of the medium, also causes suppression of the synthesis of the pigment. Figure 1; references 10: 4 Russian, 6 Western.

USSR

UDC 576.851.5.095.31/33:577.156

INFLUENCE OF SOURCES OF CARBON, NITROGEN AND PHOSPHORUS ON THE BIOSYNTHESIS OF PROTEASE WITH COAGULASE ACTIVITY BY BACILLUS SUBTILIS VAR. AMYLOLIQUEFACIENS

Moscow MIKROBIOLOGIYA in Russian Vol 46, No 4, Jul/Aug 77 pp 635-641
manuscript received 30 Nov 76

OTROSHKO, T. A., YEGOROV, N. S. and ALNURI, M. A., Department of Microbiology, Biology Faculty, Moscow State University

[Abstract] This work presents a study of the interrelationship between certain sources of carbon, nitrogen and phosphorus in the medium and the biosynthesis of exogenous proteases having coagulase activity. The object of the investigation was an active producer of proteases having coagulase activity, the strain bacillus subtilis var. amyloliquefaciens 759. Various

media were used to grow the bacteria in 750 ml flasks at 30 C on a 220 oscillation per minute rocking machine. For both naural media of undetermined composition and synthetic media, proteolytic enzymes having coagulase activity were liberated into the culture fluid. In the study of the influence of various sources of carbon, nitrogen and phosphorus on the biosynthesis of proteases with coagulase activity, it was found that mineral and organic nitrogen sources are utilized with equal facility by the bacteria for growth and biosynthesis of proteases. Furthermore, the best sources of carbon for biosynthesis of these enzymes are glucose, saccharose, maltose, fructose and sorbite, while the phosphorus source can be potassium salts of phosphoric acid. References 9: 6 Russian, 3 Western.

USSR

UDC 617-001.17-06:616.94-022.7 (staphylococcus)

ROLE OF NONPATHOGENIC STAPHYLOCOCCI IN THE DEVELOPMENT OF SEPTIC COMPLICATIONS IN BURN PATIENTS

Moscow SOVYETSKAYA MEDITSINA in Russian No 9, 1977 pp 96-99 manuscript received 17 Nov 76

MATUSIS, Z. YE., professor, PYLAYERVA, S. I., candidate of medical sciences, KUCHURIN, A. V., candidate of medical sciences and BUBLIK, L. N., Gorkiy Scientific Research Institute of Traumatology and Orthopedics

[Abstract] An examination is made of the relationship between properties of staphylococci and immunity, the expression of specific sensitization, and the onset of septic complications in burn patients. A study of 50 severe burn cases was carried out; 22 had clinical and bacteriological evidence of sepsis--28 had staphylococcal bacteremia and suspected general infection. Blood samples yielded 294 strains of staphylococci, 70% of which were nonpathogenic. To explain the presence of these nonpathogenic staphylococci, the degree of immunity to them was analyzed and a low level of phagocytosis was evident; activity of leucocytes with respect to the staphylococci was 1 1/2-2 times lower in comparison to a standard. Non-pathogenic staphylococci were seen to have high sensitization activity. The ingress of staphylococci in the blood went along with the degree of specific microbial sensitization. References 12: 7 Russian, 1 Polish, 4 Western.

Molecular Biology

USSR

UDC 577.055

ANALYSIS OF GENOME OF HUMAN ADENOVIRUS TYPE 6 USING RESTRICTION ENDONUCLEASE R·SAL I

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 237, No 1, Nov/Dec 77
pp 228-230 manuscript received 26 Jun 77

NARODITSKIY, B. S., KARAMOV, E. V., FELITSINA, T. I., DREYZIN, R. S.,
and TIKHONENKO, T. I., Institute of Virology imeni D. I. Ivanovskiy,
Academy of Medical Sciences USSR, Moscow

[Abstract] Since human adenovirus type 6--Ad 6--is non-carcinogenic, but capable of evoking in vitro transformation in cells, an attempt has been made to portray its DNA, using various restrictases, in order to determine the smallest particle of Ad 6 genome which can integrate into a cell chromosome. In the current work, Ad 6 DNA fragments in the presence of a restriction endonuclease of Streptococcus albus G--R·Sal I--were examined to determine fragment sequence in the genome. An original method was employed to isolate the enzyme from the *S. albus* strain (obtained from Cold Spring Harbor Laboratory), using ultrasound disruption of the cells, and ultimate chromatography on P-11 (Whatman) phosphocellulose. The restrictionase R·EcoRI was prepared according to R. H. Ioshimore (1972). Complete hydrolysis of Ad 6 DNA in the presence of R·Sal I yields four fragments, A,B,C,D, with individual molecular weights, the sum of which is 22.9×10^6 dalton. The smallest of the fragments of the genome of Ad 6 is 0.35×10^6 . Order of alternation of the fragments was determined by partial hydrolysis of DNA of Ad 6; fragments thus obtained, I, II, III and IV correspond (per MW) to fragments ACD, BCD, BD and CD. Thus, fragment D lies between fragments C and B. Simultaneous processing of the DNA with the two restrictionases, viz., R·Sal I and R·EcoI, was used to portray the physical picture (depicted in the article) of the genome of Ad 6. Figures 2; references 11; 1 Russian, 10 Western.

USSR

UDC 576.851.47.097.22.097.57

TRANSMISSION AND GENETIC EXPRESSION OF R PLASMIDS IN PROTEUS MIRABILIS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian
No 9, 1977 pp 106-114 manuscript received 5 Apr 77

KUPTSOVA, N. V., Institute of General Genetics, Academy of Sciences USSR,
Moscow

[Abstract] Studies on the transmission and genetic expression of plasmids R6, R124 and RP4 in 4 *E. coli* and 3 *P. mirabilis* strains showed that transmission of R6 was 2-3 orders of magnitude smaller in frequency in *P. mirabilis* than in *E. coli*. Further, the various antibiotic resistance

markers were transmitted with an identical frequency in *E. coli* but showed variable frequencies in *P. mirabilis*. In the latter case the marker most frequently transmitted dealt with resistance to kanamycin. It appears that in *P. mirabilis* R6 undergoes dissociation leading to differences in the frequencies of transconjugates possessing variable sets of genes gov'd governing antibiotic resistance. The gene responsible for tetracycline resistance may be transmitted unlinked to other resistance genes or a functional Tra operon in *P. mirabilis*. Tetracycline resistance was inducible in *P. mirabilis*, while that to kanamycin and chloramphenicol was constitutive. In the uninduced state expressivity of the tetracycline resistance gene was lower in *P. mirabilis* than in *E. coli*. In addition, *P. mirabilis* strains free of the R factor also showed inducible tetracycline resistance. Figures 1; references: 16 Western.

USSR

UDC 576.851.49.097.22.097.5.07

DETECTION OF F-LIKE PLASMIDS IN *E. COLI* SEROTYPES FROM THE INCREASE IN TITERS OF DONOR-SPECIFIC PHAGES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 9, 1977 pp 134-136

SHCHIPKOV, V. P., DROBYSHEVA, N. A., SHCHIPKOVA, N. I., OLEYNIKOVA, L. YE. and PEKHOV, A. P., Friendship University imeni Patrice Lumumba, Moscow

[Abstract] Replication of donor-specific phages MS2, Q β , and f1 was supported by 10 out of 112 standard *E. coli* serotypes, indicating the presence of F-like plasmids in these 10 serotypes, and by 2 (A680 and A1024) out of 17 enteropathogenic types. Certain of the detectable F-like plasmids carried colicinogenicity and drug resistance determinants, showed transmissiveness, and inhibited donor expressivities under the control of the F'-lac⁺ factor, i.e., the F-like plasmids behaved as f1⁺ plasmids. References 6: 3 Russian, 3 Western.

USSR

UDC 577.15

ENZYMATIC SYNTHESIS OF A FULL-LENGTH STRUCTURAL GENE OF GLOBIN WITH "STICKY" ENDS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian No 5, 1977 pp 1211-1214

FROLOVA, L. YU., SKOBELEVA, N. A., PRASOLOV, V. S. and KISELEV, L. L., Institute of Molecular Biology, Academy of Sciences USSR, Moscow

[Abstract] A scheme is presented for the enzymatic synthesis of the rabbit structural gene for β -globin. The sequence of steps are as follows: reverse transcriptase is employed for the synthesis of complementary DNA

(cDNA) using rabbit globin mRNA, followed by fractionation of the cDNA products in an alkaline sucrose density gradient to obtain a homogenous full-length cDNA fraction. The latter is then used for the synthesis of a complementary strand of DNA, covalently bound to cDNA, by means of DNA polymerase I to yield a full-length "hairpin" structural gene. In a subsequent step nuclease S₁ is used to remove the "bend" and produce a double-stranded helical gene responsible for globin. For introduction into a replicating system via a plasmid, approximately 50 TMP residues are introduced at each of the 3' ends to render them "sticky". Figures 3; references 12: 3 Russian, 9 Western.

USSR

UDC 57.085.23(047)

CONTAMINATION BY CELLS AND NEW APPROACHES TO THE CONTROL OF CONTINUOUS CELL LINES

Moscow VOPROSY VIRUSOLOGII in Russian No 4, Jul/Aug 77 pp 396-408 manuscript received 24 Jun 76

NOVOKHATSKIY, A. S., MIKHAYLOVA, G. R. and TSAREVA, A. A., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] The widespread occurrence of intraspecies cell culture contamination is considered to be the true cause of many spontaneous changes reported. This contamination can be detected by differential chromosome marker staining and determination of isoenzyme mobility. Marker chromosomes derived from the HeLa line have been found in many unrelated cell lines, as have absence of Y, mobile glucose-6-phosphate dehydrogenase type A and phosphoglucomutase types 1 and 9, all typical of HeLa. The altered enzyme was not found in animal cultures or due to viral transformation. This data has convinced the American Collection of Cell Cultures that all old, long-term cultures may be contaminated with HeLa. However the authors have found several exceptions. Whether contamination occurred via direct culture substitution or exchange of genetic information is as yet unclear. Figures 3; references 33: 5 Russian, 28 Western.

USSR

UDC 575.133

SMALL ϕ -LIKE PHAGES SENSITIVE TO RESTRICTION IN VIVO BY RESTRICTASE
R-EcoRI, R-EcoRIII

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 236, No 3, 1977 pp 744-47
manuscript received 25 May 77

RUDCHENKO, O. N. and ALESHKIN, G. I., Institute of Epidemiology and
Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] Data are presented on a new group of ϕ -like phages sensitive in vivo to restrictase R-EcoRI and an examination made of the sensitivity of a large group of ϕ -like phages to two restriction endonucleases--R-EcoRII and R-EcoRIII. Strains of E. coli C with R-factors determining R-EcoRI, R-EcoRII and R-EcoRIII restriction were used. The phages were tested for sensitivity to restriction by the host in each of the three strains. Also, phages were duplicated in cells of E. coli C and the resulting contents of unmodified phages analyzed by titration in the three strains. Effectiveness of titration was then compared to that of E. coli C. Seven phages which were sensitive to limitation of the endonucleases EcoRI and EcoRIII were identified. These phages can be divided into three serological groups differing in their reaction to the two restrictases. Group of phages 1 ϕ was limited by both endonucleases; phages 9c and G4 were restricted more effectively in strain E. coli C/R124 than in strain E. coli/pAS26; and phage ϕ R in the last strain was not restricted. This description by groups can be used to classify unknown restriction systems, coded by R-factors. References: 8 Western.

USSR

UDC 575.112

RESEARCH ON PLASMIDS IN STRAINS OF BACILLUS THURINGIENSIS VARIANTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 236, No 5, 1977 pp 1233-35
manuscript received 8 Jul 77

GALUSHKA, F. P. and AZIZBEKYAN, R. R., All-Union Scientific Research
Institute of Genetics and Selection of Industrial Microorganisms, Moscow

[Abstract] In connection with studies on toxin formation in Bac. thuringiensis, 14 strains of four variants of Bac. thuringiensis were examined to determine if plasmids were present in cells of crystalline strains and absent in noncrystalline strains. All of the strains formed spores and crystals. Noncrystalline samples were obtained by etidium-bromide treatment or by cultivation in extreme conditions (raised temperature, alkaline medium). A criterion for selection of noncrystalline samples was their ability to form colonies of S-morphology. Plasmids were detected according to a modified method of Clewell and Helinski. Electrophoresis

of plasmid strips of DNA showed that the preparation contained spiral ring molecules of DNA as well as open ring forms. The plasmids occurred only in cells of crystal forming strains. Electrophoresis of the plasmid fractions of DNA indicated a qualitative and quantitative variation in strains of one serotype and in strains of different serotypes. The formation of crystalline protein toxin may be due to a number of genetic and physiological cell mechanisms. It is apparent, however, that plasmids play a key role in forming the toxin. Figures 1; references 8: 2 Russian, 6 Western.

USSR

APPLICATION OF PHAGE Mu IN FORMATION OF CONJUGATIVE PLASMIDS FROM Hfr-STRAINS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 236, No 5, 1977 pp 1236-38 manuscript received 6 Jul 77

GRIGOR'YEV, P. S. and RYBCHIN, V. N., Leningrad Polytechnical Institute imeni M. I. Kalinin

[Abstract] Phage Mu was used in an attempt to obtain perfect conjugative F'C-plasmids. F'H and F'C plasmids were examined. To HfrH- or HfrC cells of E. coli K12 cultivated to the logarithmic phase of growth was added phage Mu cts62, 5-10 phages to a cell, and held 15 min. at 30°C. Infected cells were then mixed 1 Hfr: 5F- with bacteria AB2463 recAthrleu and lysogenized with phage Mu⁺ to avoid destruction from zygote induction or infection. Conjugation was done in Petri dishes at 30°C; after 45 min. it was stopped and cells were selected out with substances for selection of Thr⁺Leu⁺-recombinants. An analysis of the recombinants indicated that they contained Thr⁺Leu⁺-alleles in a plasmid condition. Half of the studied plasmids were conjugative, where there had been the addition of phage Mu (without the addition, they couldn't be obtained). The F'H plasmids were stable, but most of the conjugative F'C plasmids were unstable, perhaps due to disturbance of the F'-plasmid replicator integrated in the chromosome of HfrC cells. The conclusion is made that the procedure is a highly effective method of producing F' plasmids from cells Hfr with the help of phage Mu. Figures 2; references: 8 Western.

Pharmacology

USSR

UDC 616.5-001.17-097.29

COMPARATIVE STUDY OF THE BIOLOGICAL ACTIVITY OF A TOXIN ISOLATED FROM
BURNED SKIN BY PHYSICAL-CHEMICAL AND IMMUNOSORPTION METHODS

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian Vol 23, No 5, Sep/Oct 77
pp 685-689 manuscript received 29 Sep 76

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[Abstract] Earlier work of Movshev had pointed to the formation of a highly-active toxin in burned skin, and the physical-chemical properties of the toxin had been studied. Further processing of this toxin is described in the present report. The toxin used was isolated from a water-salt extract of burned rat skin, the extract being subjected to fractionation or to processing on immunosorbents. The fractionation procedure involved salting-out, gel filtration, and electrophoresis, followed by isoelectric focussing on ampholin (LKB, Sweden) at appropriate pH; the immunosorbents used contained pure antibodies to the toxin, but no admixtures of antibodies to antigens of normal tissues or sera. The properties and specificities of the immunosorbents have been described in previous reports (1976). The immunosorbent used in the present work was No 49 based on CNBr-Sepharose 4B (Pharmacia, Sweden). Tests in mice of the isolated toxin indicated the high specificity of the immunosorbent separation procedure. The toxin strength decreases with storage time. Figure 1; references: 9 Russian.

USSR

UDC 616.831-005.98-092.9-085.21

EFFECT OF CERTAIN NEUROLEPTIC, AND ADRENO-, SYMPATHO- and CHOLINOLYTIC
SUBSTANCES ON THE COURSE OF EXPERIMENTAL NICOTINE-INDUCED BRAIN EDEMA

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 40, No 3, 1977
pp 281-283

KOZLOV, S. N. and YASNETSOV, V. S., Department of Pharmacology, Smolensk
Medical Institute

[Abstract] Brain edema is a fairly frequent, and also quite serious, complication of neurosurgical operations, skull and brain traumas, brain tumors, intoxications of various sorts, and some other conditions. Nevertheless, no single, substantiated theory of its pathogenesis has been developed, and treatment most often is based merely on empirical data. In view of the suggested role of catecholamines in the occurrence of this condition, the authors studied the effect of substances associated with catecholamine metabolism in the central nervous system. Experiments were

run with 172 white rats in the 170-220 g weight range, in which brain edema was induced by the intra-abdominal administration of nicotine in doses of 40 and 80 μ g/kg following preliminary trepanation of the skull. A correlation analysis method (B. TS. URLANIS, 1973) was used to determine water content and density of the brain. The effects of subcutaneous injections of aminazine (1 and 5 mg/kg), triptazine (5 and 10 mg/kg), haloperidol (5 and 10 mg/kg), amizil (1 and 5 mg/kg), difacil (5 and 10 mg/kg), phentolamine (5 and 10 mg/kg), obsidan (5 mg/kg), guanethidine (5 mg/kg), dopegit (100 mg/kg) and α -methyltyrosine were studied. Aminazine, amyzyll, phentolamine and dopegit prevented the appearance of edema from nicotine doses, while haloperidol and difacil had a weakly antiedemic effect. The other substances were without effect. It is concluded the liberation of catecholamines and the excitation of the α -adrenoreactive systems figure prominently in nicotine-induced brain edema. References 16: 8 Russian, 8 Western.

USSR

UDC 612.828.014.46:615.217.3

MUSCARINE-SENSITIVE CHOLINOREACTIVE SYSTEMS IN THE RESPIRATORY CENTER

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 40, No 3, 1977
pp 284-288 manuscript received 17 May 76

FEYGMAN, E. E. and VORONOV, I. B., Pharmacological Laboratory of the Institute of Evolutionary Physiology and Biochemistry imeni Sechenov, Academy of Sciences USSR, Leningrad

[Abstract] The fact that cholinesterase inhibitors suppress the action of the respiratory center has been known since the 1940s. In the present study the authors investigated the action of cholinomimetic substances with muscarine-type properties on the rhythmic action of the respiratory center, and also the action of the cholinesterase inhibitor armine. It was found that in both curarized and decerebrated cats, with previously blocked m-cholinoreceptors, intravenous injections of 1-3 mg/kg arecoline and oxotremorine suppressed the electric potential of the phrenic nerve, and that such suppression is removed by those central cholinolytics which have antimuscarine effects. It is concluded that the pontobulbar part of the brain includes muscarine-sensitive cholinoreactive systems which exercise an inhibitory effect on the rhythmic activity of the respiratory center. Figures 2; references 17: 9 Russian, 8 Western.

USSR

UDC 615.31:547.944.1.099

TOXICITY OF SOLASODIN AND DIOSGENIN

Moscow KHIMIKO-FARMATSEVTICHESKIY ZHURNAL in Russian Vol 11, No 8, Aug 77
pp 82-87 manuscript received 8 Feb 77

RYNDINA, S. YE., SHASHKINA, L. F. and STARKOV, M. V., Filial of the All-Union Chemical and Pharmaceutical Scientific Research Institute imeni S. Ordzhonikidze, Moscow Oblast

[Abstract] Solasodin is now increasingly used instead of diosgenin as the raw material for producing synthetic steroid hormones. Both substances are sapogenins and physicochemically similar, having almost the same melting point and equal molecular masses, but solasodin contains an NH-group instead of one oxygen atom in the F-ring. A comparative study was made of their toxicity characteristics in acute-poisoning tests and in repeated intragastric or intraperitoneal injections into female mice and rats. The animals were killed after the experiments and their organs subjected to pathomorphological as well as histological examination. A statistical evaluation of the data indicates that both substances are not very toxic upon single injection into the stomach. Upon second injection in equal doses, diosgenin is still not toxic while solasodin attacks the liver, the kidneys, the nervous system, and the endocrine glands. The toxicity of solasodin is attributed to the NH-group in its molecular structure. In terms of industrial safety, a concentration of 0.03 mg/m³ solasodin dust in air must be labeled as "penetrating the skin" and production of this substance classified as "extra hazardous". Figures 3; references 17: 14 Russian, 3 Western.

USSR

UDC 615.355:577.152.344.015

HYGROLITIN, A NEW ENZYME PREPARATION

Moscow KHIMIKO-FARMATSEVTICHESKIY ZHURNAL in Russian Vol 11, No 8, Aug 77
pp 36-41 manuscript received 17 Feb 77

KUSHER, L. A., GRINBERG, G. YE. and MIKHAYLETS, G. A., All-Union Scientific Research and Technological Institute of Antibiotics and Enzymes for Medical Use, Leningrad

[Abstract] Hygrolitin, a proteolytic enzyme preparation was first obtained in 1970 at the Leningrad Scientific Research Institute of Antibiotics from Act. Hygroscopius in the form of a white powder containing 10% albumen and soluble in water as well as in brine. A study of this preparation was made on natural biological objects, to establish its usefulness in medical practice for diluting dense viscous exudates and dissolving dead necrotic

tissues. Accordingly, both the pharmacological and the toxic characteristics of hygrolitin were tested on mice, rats, and rabbits so that its stability under physiological conditions could be determined. Inhalation of its aerosol was found not to affect the behavior of these animals, nor the performance of their lungs and blood system. On the basis of preliminary results, the first preparation of microbial origin has been released for clinical tests and subsequently approved by the USSR Ministry of Health for medical use. Figures 5; references 9: 7 Russian, 1 German, 1 Western.

USSR

UDC 616-001.36-02:615.38.1-085.273.53

EFFECT OF HEPARIN ON THE COURSE OF BLOOD TRANSFUSION COMPLICATIONS CAUSED BY TRANSFUSION OF INCOMPATIBLE BLOOD

Moscow PROBLEMY GEMATOLOGII I PERELIVANIA KROVI in Russian Vol 22, No 7, 1977 pp 42-48 manuscript received 3 May 76

MONASTYRSKIY, V. A., doctor of medical sciences, SLONSKAYA, V. T., NAZAR, P. S. and BESHLEY, V. I., L'vov Medical Institute; L'vov Institute of Hematology and Blood Transfusion

[Abstract] Experiments involving 14 female dogs with ureters extracted and 92 white rats in a study of the state of hemodynamics, coagulation system, structure of the parenchymatous organs, ultrastructure of the nephron and partial functions of the kidneys after heterohemotransfusion (25 mg/kg) without injection of heparin and after injection of 3 mg/kg of heparin indicated that heparin in these doses did not significantly affect the reactions characteristic of incompatible blood transfusion, did not prevent arterial and venous blood pressure reduction and did not inhibit intravascular hemolysis. Heparin blocked the development of hypercoagulation and simultaneously completely prevented damage to kidney structure and damage to other parenchymatous organs. Figure 1; references 7: 5 Russian, 1 Polish, 1 Western.

Physiology

BULGARIA/USSR

A MODEL MECHANICAL SYSTEM SIMULATING THE ACOUSTICAL PROPERTIES OF THE HUMAN MASTOID

Moscow BIOFIZIKA in Russian No 5, 1977 pp 915-917 manuscript received 18
18 Nov 75

BERAKHA, R. YA., Center for Hygiene, Medical Academy, Sofia, Bulgaria

[Abstract] The circuitry is described of a model mechanical system designed to simulate the acoustical properties of the human mastoid, which shows excellent correlation between the input impedance determined experimentally and derived from the model in the frequency range of 100 to 15,000 Hz. Further, at frequencies below 100 Hz the model offers a qualitative description of the human mastoid. Figures 2; references 8: 7 Russian, 1 Western.

USSR

UDC 612.1

EFFECTS OF SOLAR ECLIPSE ON THE CARDIOVASCULAR SYSTEM

Baku IZVESTIYA AKADEMII NAUK AZERBAYDZHANSKOY SSR in Russian No 3, 1977
pp 111-114

ISAZADE, G. M., TAGI-ZADE, Z. A., ALIRMARDANOV, F. I. and ABBASOV, A. R.

[Abstract] Cardiovascular and blood studies were conducted on 57 women and 44 men on April 28, 29, and 30 in 1976 to correlate any possible changes in the parameters under consideration with the April 29, 1976 solar eclipse. The subjects ranged in age from 20 to 80 years; 12 of the subjects were clinically healthy blood donors while the remainder showed various degrees of cardiovascular system disorders. There were no significant variations in blood pressure in normotensive individuals; an increase was seen in hypertensive subjects and a 15-20 mmHg decrease in hypotensive subjects. Individuals with tachycardia showed a decrease in the heart rate of 5-30/min, while the decrease in bradycardiacs was in the range of 3-12 min. The heart rate in the control subjects was not affected. Similarly, there were no meaningful EKG changes in the healthy subjects, while individual patients showed changes indicative of deteriorating coronary supply. In addition, in some of the patients blood fibrinogen levels were elevated by 5-8% and fibrinolysis prolonged by 10-12.5%. The changes which were noted disappeared 2 days after the eclipse. It should also be noted that this solar eclipse was accompanied by a burst of solar activity. References 10:
1 Polish (Russian abstract), 8 Russian, 1 Western (Russian translation).

USSR

UDC 612.17.017.3-087.23

ALLERGIC RESPONSE OF BEATING HEART CELLS IN TISSUE CULTURE

Moscow BYULLETEL' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 10,
1977 pp 440-442 manuscript received 16 Jun 77

ADO, A. D., academician of the Academy of Medical Sciences USSR, and
TEREKHOVAUVAROVA, N. A., Scientific Research Allergy Laboratory, Academy of
Medical Sciences USSR, Moscow

[Abstract] A technique is described for obtaining a tissue culture of beating human heart cells. The starting tissue consisted of heart tissue from surgically aborted 6-10 week feti, which yielded a preparation possessing a rhythmicity of 12-25 beats/min. A marked decline in the rate was observed 5-7 days later, with restitution of rhythmicity--occasionally to original levels--on replenishment with fresh nutrient medium. Experiments with 3-5 day old cultures of beating chick or duckling heart cells derived from 6-10 day old chicks or 10-12 day old ducklings showed an innate rhythmicity of 54 ± 2.9 beats/min. Addition of homologous complement-binding antisera led to a fall in the rate to 16 ± 1.2 beats/min ($P < 0.001$) within 10-20 min for 6-8 hr, and vacuolization. Addition of ragweed pollen allergen in conjunction with specific anti-allergen antisera resulted in a decrease in rhythmicity to 19 ± 0.7 beats/min ($P < 0.001$) within 20 min which persisted for the 6-8 hr period of observation and appearance of cellular vacuolization within a day. Control studies confirmed that damage to the heart cells resulted from the immune complexes and that the myocardium apparently serves as one of the target tissues in allergic reactions. Figures 1; references 12: 4 Russian, 8 Western.

Plant Biochemistry

USSR/CSSR

UDC 631.811.1:631.521:633.16

SPECIES-SPECIFIC RESPONSIVENESS OF BARLEY TO NITROGEN NUTRIENTS

Moscow AGROKHIMIYA in Russian No 7, 1977 pp 14-21 manuscript received
8 Jun 76

ZENISCEVA, L. S., BEZDEK, V., SPUNAR, J., Scientific Research Institute
of Grain Crops, Kromeriz, CSSR

[Abstract] Laboratory tests were conducted during 1973-1975 to determine responsiveness of several varieties of spring barley (KM-947, KM-932, Dvoran, Amethyst) to variable levels of nitrogen nutrients. The studies were designed to simulate climatologic conditions prevailing in the CSSR with the plants grown in a soil:silicic sand (1:1) mixture and treated with one to three doses of $(\text{NH}_4)_2\text{SO}_4$ (single dose: 1N = 0.14 gm per plant), with superphosphate and potassium salt to yield N:P:K = 1:1:2. The effectiveness of plant utilization of available nitrogen was found to be dependent on the climatic conditions, the available level of nitrogen, and the genetically determined responsiveness of the plant. Increased levels of available nitrogenous nutrients were accompanied by greater expenditures of nitrogen for grain formation in each variety, with the coefficient of responsiveness varying from 9 to 42% depending on the genotype. The most efficient use of additional nitrogen nutrients for grain formation was recorded for KM-947 spring barley. Figures 3; references 15: 3 Czech, 8 Russian, 4 Western.

USSR

UDC 632.954:631.82

INFLUENCE OF MINERAL FERTILIZERS ON THE EFFECTIVENESS OF THE 2,4-D HERBICIDE

Moscow AGROKHIMIYA in Russian No 7, 1977 pp 104-110 manuscript received
17 Jun 76

NEPOCHATOV, A. P. and ZIMOVSAYA, A. T., Scientific Institute of Fertilizers, Insecticides, and Fungicides, Moscow

[Abstract] Field trials were conducted during 1970-1975 in the Kharkov Oblast chernozem region designed to evaluate the effects of mineral fertilizers on the efficiency of the 2,4-D herbicide in controlling weeds on barley, oats, and corn fields grown for grain and fodder. The results showed that using mineral fertilizers at a level of N45P45K45 led to the major increase in weeds (77-147%), while doubling the level of fertilizer resulted in only an insignificant increase in weed growth (13-29%). Generally, weeds were most stimulated on corn fields treated with the mineral fertilizers. 2,4-D was most effective in weed control in the barley and oat fields, less effective on corn fields planted for fodder, and least effective on corn fields planted for grain. However, the correct combination

of 2,4-D and the mineral fertilizers was most effective in promoting growth of corn designated for fodder. Further, proper mineral fertilizers served to markedly alleviate the susceptibility of barley and the oat crops to 2,4-D. References: 9 Russian.

USSR

UDC 633.521:631.84

RESPONSIVENESS OF NEW FLAX VARIETIES TO SLOW-ACTING NITROGEN FERTILIZER

Moscow AGROKHIMIYA in Russian No 7, 1977 pp 22-25 manuscript received 27 May 76

TIKHOMIROVA, V. YA., All-Union Scientific Research Institute of Flax (VNIIL), Torzhok, Kalininskaya Oblast

[Abstract] Field studies were conducted on podzolic sod to test the effectiveness of double application of a slow-acting nitrogen fertilizer (urea-formaldehyde) against a single application of a standard nitrate fertilizer (N30P60K90) during spring in terms of the responsiveness of VNIIL-11, Tvertsa, and Orshanskiy-2 flax varieties. Analysis of the resultant data demonstrated that the use of slow-acting fertilizer (N60-P60K90) increased the resistance to lodging of VNIIL-11 and Tvertsa flax by 0.6 and 0.8 scale units, respectively, the yield of long fibers by 2.3 and 3.6%, respectively, and the fiber harvests for both varieties by 1.6 quintals/hectare. The responsiveness of Orshanskiy-2 flax was essentially identical to both fertilizers. References: 8 Russian.

USSR

INFECTION OF WHEAT WITH YELLOW RUST

Moscow ZASHCHITA RASTENIY in Russian No 8, Aug 77 p 41

ABIYEV, S., candidate of agricultural sciences, ZHAKHANOV, A. and KENESARINA, G., junior scientific collaborators of the Botanical Institute, Academy of Sciences Kazakh SSR, and YESENGULOVA, B., Senior Laboratory Technician

[Abstract] Yellow rust is a problem in the southern mountains of Kazakhstan every 3-4 years, especially on plantings of the wheat varieties Saratovskaya 29 and Kazakhstanskaya 126. Test at the Alma-Ata Testing Grounds in 1975-1976 indicated that winter wheat was more resistant than spring varieties, and suitable winter hybrids were recommended for planting.

USSR

UDC 632.931:633.11

WINTER WHEAT DISEASES IN NORTHERN OSSETIA

Moscow ZASHCHITA RASTENIY in Russian No 8, Aug 77 p 29

ISHKOVA, T. I., Graduate Student, All-Union Institute for Grain Crops

[Abstract] Powdery mildew and brown rust have hampered crop successes on a regular basis in the region, so that investigations have been undertaken concerning the impact of warm winters and relatively high moisture levels on wheat plantings in the Severo-Ossetinskaya ASSR. Early plantings were found to have an effect of increasing infections, and brown rust occurred more commonly when plantings followed grass in the rotation. Heavier fertilization, especially with nitrogen fertilizers, increased infection, but improved crop yields more than compensated. Mechanical means, timing and avoidance of one-sided nitrogen applications all had positive effects in the region.

USSR

UDC 632./3-633.49

POTATO SEED GROWING ON A VIRUS-FREE BASIS

Moscow ZASHCHITA RASTENIY in Russian No 8, Aug 77 pp 22-24

TROFIMETS, L. N., Chief of the Section for Prevention of Viral Diseases and for Producing Disease-Free Potatoes, Scientific Research Institute for Potato Growing

[Abstract] Two emphases are discussed in potato seed production, the acquisition of healthy initial material for seed crops and protection of seed potato crops from subsequent infections until the time of production planting. The laboratory tests included numerous measures, such as preparation and storage, cutting and planting, virus control, hothouse plantings, artificial raising of healthy stock, and selection of hybrids suitable for particular geographical regions. The procedures developed sought to shorten the period for producing seed potato crops from the normal five years to 3-4 years, while preserving and improving disease resistance and general hardiness. Major difficulties initially encountered were related to raising healthy seed crops in a closed environment. A serological approach was used to attempt to eliminate X, S and M viruses, but results indicated that except for some successes with antiserum against the Y virus, better results came with the tracer Solanum chacoense, and with insecticides. Both personnel and technology for producing high quality seed potatoes are lacking. Two pictures.

USSR

UDC 547.587+992:632.165

DYNAMICS OF PHENOL COMPOUNDS AND LIGNIN IN THE STEM OF WINTER WHEAT AND DEVELOPMENT OF RESISTANCE TO LODGING

Kiev FIZIOLOGIYA I BIOKHIMIYA KUL'TURNYKH RASTENIY in Russian Vol 9,
No 4(49), Jul/Aug 77 pp 359-365 manuscript received 28 May 76

LYASKOVSKIY, M. I. and KALININ, F. L., Institute of Plant Physiology,
Academy of Sciences UkrSSR, Kiev

[Abstract] The authors study the part played by lignin and the process of lignification in development of lodging resistance of winter wheat. The work is based on experimental research in 1970-1975 with grades of winter wheat having widely varying lodging resistance. The research also covered differences in the activity of key enzyme systems of phenol metabolism that synthesize lignin predecessors as well as the interrelation between stem growth, accumulation of phenol compounds and lignin, and the influence that the retardant chlorocholine chloride has on these processes. Details of the experimental procedure are given. It was found that the lodging resistance of a given variety of winter wheat correlates with intensity of growth processes, content of phenol compounds, activity of enzyme systems of phenol metabolism, lignin content, and time rate of lignification of the stem. On the one hand, an increase in the activity of phenylalanine- and tyrosine-ammonium lyases, with increasing lodging resistance of the variety as well as under the influence of chlorocholine chloride, increases the deamination of aromatic amino acids, thus preventing incorporation in protein synthesis, which may retard growth processes. On the other hand, the activation of deamination and increase in the content of phenol compounds that act as inhibitors retard growth processes and increase the rate of lignification. As a result, the formation and development of mechanical tissues of the stem in lodging-resistant varieties, and when lodging resistance is improved by treating the plants with chlorocholine chloride, take place most intensively during the stage of emergence of the coleoptile. Intensified growth and weak lignification of lodging-prone varieties during the period of emergence of the coleoptile are responsible in part for the low mechanical strength of the straw and its lodging tendency. Figures 5; references 21: 10 Russian, 1 Czech, 10 Western.

USSR

UDC 581.1:581.19:632.07:632.165:633.14

PHYSIOLOGICAL AND BIOCHEMICAL DIAGNOSIS OF LODGING OF WINTER RYE

Kiev FIZIOLOGIYA I BIOKHIKIYA KUL'TURNYKH RASTENIY in Russian Vol 9, No 4(49) Jul/Aug 77 pp 366-369 manuscript received 29 Apr 76

MAKAROVA, N. N. and VISHNYAKOVA, I. I.

[Abstract] A report on research of the way that carbon-14 assimilates in the transport products of winter rye that come from the second leaf down are distributed through the internodal lengths of the stem and through the reproductive organs of the plant. Two varieties were studied: Kungs (Sweden) with short stem (102 cm), resistant to lodging, having 3-4 leaves on the stem and with comparatively low yield under the conditions studied (28 centners per hectare [1.25 tons per acre]); Kazanskaya with long stem (133 cm), prone to lodging, having 5-6 leaves on the stem and with high yield (45 centners per hectare [2 tons per acre]). The research also investigated the effect of chlorocholine chloride on transport of carbon-14 assimilates. It is found that the distribution of carbon-14 assimilates through the internodal spaces of the stem depends both on the height level of the internode and on the ontogenetic state of the plants. In varieties with different responses to lodging, different amounts of photosynthetic transport products flow to the internodes of the stem. In the variety that is resistant to lodging, there are more C-14 assimilates in all internodal spaces than in the lodging-prone variety. Chlorocholine chloride increases the influx of C-14 assimilates into the internodes from the leaves in both varieties. References 6: 5 Russian, 1 Western.

USSR

UDC 581.192:633.15

AMOUNT OF PROTEIN IN THE GRAIN OF LOW-PROTEIN AND HIGH-PROTEIN VARIETIES OF MAIZE

Kiev FIZIOLOGIYA I BIOKHIKIYA KUL'TURNYKH RASTENIY in Russian Vol 9, No 4(49), Jul/Aug 77 pp 370-376 manuscript received 30 Mar 76

IMSHENETSKIY, YE. I. SEMENYUK, V. F. and SYSOYEV, A. F., All-Union Institute of Selection and Genetics, Odessa

[Abstract] The paper gives the results of a comparative analysis of the fractional and amino acid compositions of some low-protein and high-protein varieties of maize: high-yield Odesskaya 10, three high-protein varieties derived from Odesskaya 10, and the superprotein line IHP selected by the Illinois Experimental Station. The results of the study show that the high-protein varieties contain less histidine and arginine in water-salt-soluble proteins than do conventional varieties of maize, but more threonine, glycine, alanine, valine, leucine and phenylalanine. The unextracted

(residual) proteins contain less histidine, arginine, proline, glycine and tyrosine, but more alanine, leucine and phenylalanine. The amino acid makeup of the reserve proteins (alcohol- and alkali-soluble) was practically identical (except for a somewhat lower content of arginine and phenylalanine, and a somewhat higher content of glutamic acid in the alcohol-soluble proteins of high-protein varieties of maize). The results of amino acid analysis are attributed to the heterogeneity of the protein fractions as demonstrated by the method of disk electrophoresis in polyacrylamide gel. References 18: 12 Russian, 6 Western.

USSR

UDC 633.11:631.524.86

MEANS OF DEVELOPING WHEAT SELECTED FOR RUST IMMUNITY

Moscow SELEKTSIYA I SEMENOVOZSTVO in Russian No 3, 1977 pp 23-26

PUCHKOV, YU. M., candidate of agricultural sciences and VORONKOVA, A. A., candidate of biological sciences, Krasnodar Scientific Research Institute of Agriculture imeni P. P. Luk'yanenko

[Abstract] The authors seek rust resistant wheat which will withstand development of newly virulent rust populations. One scientific trend is the creation of new Krasnodar varieties resistant to brown and yellow rust and downy mildew. Another trend is the development of varieties differentiated by genes of specific resistance. The authors organized the establishment of sample rust populations in various parts of the selection center; infection was more widespread at these points than at Krasnodar. The most resistant wheat at Krasnodar remained resistant at all points. Researchers are experimenting with hybrids analyzed genetically to increase disease resistant genes resistant to specific diseases. Some varieties developed are Dimitrovka 5-12, Agrus, and Sonalika. Especially valuable for maintaining resistance to rust and other diseases in succeeding generations are Yugoslavian varieties--Biserka, NS-523, and others. Researchers hope to perfect methods in the future, of determining the presence of genes with field resistance combined with race-specific resistance. Also planned is the study of other specific qualities of genes in the different varieties.

USSR

UDC 633.11:631.524.86

RUST RESISTANCE OF EARLY GENERATION WHEAT HYBRIDS

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 3, 1977 pp 26-28

GOGUN, G. B., and TVERDOKHLEB, N. S., candidates of agricultural sciences, North Caucasian Scientific Research Institute of Phytopathology

[Abstract] Data are presented of a four year study concerning susceptibility of winter wheat hybrids to stem and yellow rust in artificial conditions. Wheat samples (1055) from 11 selection centers in the Ukraine and Northern Caucasus were studied, largely crosses from various geographical locations. Infection was measured according to Ministry of Agriculture methodology. Although most of the hybrids are receptive to the rust, the resistant hybrids increase every year. Of 160 hybrid populations in severely infectious conditions, 14 produced resistant plants for all types of stem rust (7 hybrids from All-Union Institute of Selection and Genetics, 2--Stavropol Scientific Research Institute of Agriculture, 5--All-Union Scientific Research Institute of Corn). Hybrid (Avrora X (232)66 Bezostaya 1) X (Odesskaya 22 X Odesskaya 16) was especially resistant. Generally there are many hybrids resistant to Krasnodar rust. One hybrid, Lyutestsens 145, has a different genotype than others; it is recommended where others become infected. The study of brown rust in 1973 contributed 14 hybrids resistant to that disease. The best hybrids for yellow rust were Kavkaz, Avrora, Bezostaya 1 and Lyutestsens 145--for stem rust, Kavkaz, Avrora, and Lyutestsens 145.

USSR

UDC 633.11:631.524.86

EVALUATION OF SPRING WHEAT RUST RESISTANCE

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 3, 1977 pp 29-30

PAKHOMOV, V. I., candidate of agricultural sciences and POTUSHANSKAYA, M.I., candidate of biological sciences, Ulyanovskaya Agricultural Experiment Station

[Abstract] The researchers discuss selection of wheat resistant to brown rust in the Ulyanovsk oblast. Artificial testing was created in 1971. To increase infection, nitrogen fertilizers were applied in increased doses, sowing was done after the optimal period, non-resistant varieties of wheat were planted around the samples, and extra water was applied. The most widely spread and dangerous races of brown rust were artificially induced: races 77, 149, 122, 116, and 20. Estimates of infection were made at the onset of the disease and during the maximum infection. The vegetative period is examined so that late maturing samples will be considered. Susceptibility of leaves was estimated according to the scale of Rusakov; type

of infection was estimated according to the scale of Maines and Jackson. During 1970-1973, 336 samples from the All-Union Scientific Research Institute of Plant Growing (from widely diverse origins all over the world) were tested. The largest number of resistant forms were from North and South America; resistant forms from the USSR were Bezenchukskaya 98, Kinel'skaya 14, Al'bidum 604, Otechestvennaya, Minskaya, and Zavolzhskaya.

USSR

UDC 633.16:631.524.86

RESULTS OF STUDYING BARLEY SAMPLE RESISTANCE TO SMUT

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 3, 1977 pp 30-31

BEKK, E. G., senior scientific collaborator, All-Union Scientific Research Institute of Grain Farming

[Abstract] The author reviews a test of 380 samples of barley from the All-Union Scientific Research Institute of Plant Growing conducted in the Kazakh SSR to evaluate the samples for smut resistance. The study was done from 1968 to 1974 with artificial infection done by the Krivchenko vacuum method. Quantities of afflicted and healthy spikes determined the degree of infection. The largest number of resistant forms were found to be from the geographical origins of the disease in the Near East and Asia--25% of the samples from there were highly resistant. European samples were not especially resistant. From 35 USSR varieties, noticeably resistant were Kharkovskiy 306, Pallidum 45, Donyetskiy 4 and Kubanyets. Local Armenian-Georgian samples deserve attention for their disease resistance and productivity; noticeable varieties were K-15468 from Azerbaidzhan, K-8166, K-6613, and K-6140 from Armenia, K-17486 and K-6161 from Georgia. Other practically resistant barley varieties are listed from the following countries: Afghanistan, China, and Mongolia. Some Indian and Ethiopian samples showed high resistance. The following varieties showed high resistance and other valuable properties: Ogalitsu C. J. 7152(Canada); DZ-02-416, Jet C. J. 967, DZ-02-455, and three local varieties (Ethiopia); C-155 (India); and Yevropeum 353/133 (USSR).

USSR

UDC 631.171.51:631.53.02

SEED CLEANING AND DRYING COMPLEXES AND PLANTS FOR POST-HARVEST GRAIN
PROCESSING

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 3, 1977 pp 50-53

MAKHOVSKIY, V. I., chief engineer, Central Institute of Technical and Economic Indicators for Grain Production

[Abstract] This is a review of the Institute's work on developing designs for model projects of grain processing enterprises. Examples of sample projects include 812-51, which processes and stores 1500 tons of one type of grain; 812-57 and 812-58, projects for processing and storing 2.5-5 tons of two types of grain. The latter projects will process grain in three stages: (1) harvesting and preliminary cleaning; (2) further cleaning; (3) presowing warming. Resource requirements--water, electricity, steam--are listed for the complexes. In addition, there will be designs for special grain enterprises this year; a design for a five ton capacity project in the nonchernozem area of the RSFSR is scheduled for construction in 1978. Plants with larger capacities are to be constructed in the future; one experimental plant for hybrid corn will hold 1500 tons, costing 1.3 million rubles. A sorghum plant being developed will have a capacity of 2000 tons, and will cost 420,000 rubles. On the basis of these experimental enterprises, larger ones are envisioned.

USSR

UDC 523.581.1

SPROUTING PINE SEEDS IN A STATE OF WEIGHTLESSNESS (A STUDY IN THE
SATELLITE KOSMOS-782)

Moscow IZVESTIYA AN SSSR SERIYA BIOLOGICHESKAYA in Russian No 5, Sep-Oct 77 pp 770-776 manuscript received 1 Feb 77

PLATONOVA, R. N., PARFENOV, G. P., OL'KHOVENKO, V. P., KARPOVA, N. I.
and PICHUGOV, M. YE.

[Abstract] Pinus silvestris seeds were selected for their germination in 5-7 days at 20° C and slow subsequent growth, and planted in agar moistened with distilled water at a depth of 1.5 mm after treatment with nitrogen peroxide. The seeds were placed with the bud pointing up, down, right and left. A control, revolving planting was also made. Results indicated that only those seeds with the bud pointing vertically downward grew normally, while in the control all seeds grew normally. It was noted that essentially all seeds in the experimental and control groups with the bud upward sprouted. The orientation variations brought similar results in a space satellite and on earth, but the results in space were experimentally "purer." In the absence of phototaxis, roots and surface parts of the

plants in space differed from those on earth in their orientation upward or downward. It may be concluded that only those seeds that are placed with the bud downward will develop normally in outer space. Further research should seek to determine if seeds sprouted in the atmosphere will grow normally if phototaxis is substituted for geotaxis. Figures 4; references 5: 1 Russian, 4 English.

USSR

UDC 631.32:633.51

PLANT BREEDING OF WILT-RESISTANT COTTON VARIETIES

Moscow IZVESTIYA AN SSSR SERIYA BIOLOGICHESKAYA in Russian No 5, Sep-Oct 77 pp 776-780 manuscript received 15 Jan 77

TER-AVANESYAN, D. V., Botanical Institute imeni V. L. Komarov, Academy of Sciences USSR, Leningrad

[Abstract] Verticilliaceous and fusarial wilts continue to decrease cotton yields in the USSR by 10-15%. Several research projects are underway to control the diseases in the USSR as well as in the United States. One approach related to establishing temperature parameters for planting to avoid wilt infestations. Wilt-resistant strains are being developed but questions remain as to their heredity and hardiness relative to the parasites. Experience shows that late maturing varieties are less often hosts than earlier varieties with higher yields. In the USSR particular concern is aroused by fusarial wilt infecting fine-fibered cotton varieties in southern Turkmenia; these varieties are also infested by nematodes, and considerable research has been done on developing resistance varieties. References 12: 4 Russian, 8 English.

USSR

UDC 633.853.78:631.53.02(470.61)

METHODS OF INCREASING YIELD OF SUNFLOWER SEEDS

Moscow SELEKTSIYA I SEMENOVDSTVO in Russian No 3, 1977 pp 57-61

BELEVITSEV, D. N., candidate of agricultural sciences, Don Experimental Station of Oil-Bearing Crops, All-Union Scientific Research Institute of Oil-Bearing Crops

[Abstract] The author documents research on sunflowers to increase crop yield. Experiments conducted from 1963-1974 showed that nitrogen-phosphorus ($N_{180}P_{240}$) fertilizers changed the soil composition and improved sunflower harvests. Further experiments with sunflowers in untreated soil indicated that the chemical composition of the seeds (content of oil,

nitrogen, potassium, and phosphorus) reflected plant characteristics. Oil content had a negative correlation with seed nutritive elements, especially phosphorus and nitrogen. However, there were plants which successfully combined high content of oil and phosphorus. Seeds of these plants also contained some other nutritive elements and were comparatively heavier. The more phosphorus, the less nitrogen--apparently due to combining with nitrogen and potassium. High phosphorus content in seeds determines their ability to thrive in soil lacking that element, especially during the first stages of growth. Researchers concluded that seeds high in phosphorus, nitrogen, and potassium possess qualities for increased yield. Creation of a method of ascertaining chemical composition for genetic selection of sunflowers is urged. Figures 3.

USSR

UDC 633.1:631.53.011.3

MORPHO-PHYSIOLOGICAL EVALUATION OF SEEDLINGS AND SEED GROWING ENERGY

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 3, 1977 pp 67-68

LIKACHEV, B. S., candidate of biological sciences, Kuban Experimental Station, All-Union Scientific Research Institute of Plant Growing

[Abstract] The factor of growing energy is considered as an indicator in evaluating seeds along with the indicators of laboratory germinating capacity and vigor. The authors recommend field testing of plants for size, wholeness, degree of leaf development and pigmentation, number and size of new seedlings, and general condition of seedlings. Definitions of growth indicators need to be carefully defined. Tests were conducted on wheat, rye, triticale, barley, oats, corn, sorghum, peas, chick-peas, peavine, soy, and sunflowers to determine the statistical characteristics of the seedlings according to their degree of development. A table outlines these characteristics, with major divisions of normal (strong) and abnormal (weak). The indicated method allows the possibility for ascertaining vigor, germinating capacity, and growing energy in this one test. Evaluation of one seedling took only 5 to 7 min. Growing energy includes many factors, including environmental conditions. In working out a definition for growing energy, its connection with the other factors must be clarified—it is closest to field germinating capacity. The proposed method refines the prognosis of plant quality.

Radiobiology

USSR/HUNGARY

UDC 615.849.2:546.791).034

POSSIBILITIES FOR ACCELERATION OF ELIMINATION OF URANIUM WHICH HAS
THE BODY (EXPERIMENTAL STUDY)

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian Vol 22, No 9, Sep 77 pp 35-40
manuscript received 29 Sep 76

CHEVARI, S., KESTHEIN, B. and CHEVARI, M., Medical Center of the Mechecz
Mining Enterprise, Pecs, Hungary

[Abstract] Chelation therapy, that is, the formation of complexes of appropriate substances with radioactive elements which have entered the body and subsequent elimination of the complexes is currently employed to remove undesirable radioactive elements from the body. A study is made of the complex formation of uranium with pharmaceutical preparations currently used in therapeutic practice, e.g., oxytetracyclin, arsotonin, NaHCO_3 , atriphos, edtakal, penicillin, chlorurit, and delagil. The characteristics of this formation of complexes--e.g., stability, dissociation, concentrations, pH—are used to derive a function incorporating these characteristics. This function is shown experimentally to correspond to the ability of the complex to eliminate uranium from the body of white rats. Selection of a chelating agent for elimination of uranium can be guided by the relatively simple determination of its complex-forming function. Figures 2; references 5: 3 Russian, 1 Hungarian, 1 Western.

USSR

UDC 616-073.916:615.849.2

DIAGNOSTIC USE OF RADIOPHARMACEUTICAL PREPARATIONS

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian Vol 22, No 9, Sep 77 pp 23-29
manuscript received 8 Oct 76

ZUBOVSKIY, G. A., LIKHTAREV, I. A., ARKHANGEL'SKAYA, G. V., DOBROSKOK, A.I., KRASNOSHCHEKOVA, G. P., OGNEVA, T. V. and LEVINA, G. A., Moscow Scientific Research Roentgen-Radiological Institute, Ministry of Health RSFSR. Leningrad Scientific Research Institute of Radiation Hygiene, Ministry of Health RSFSR

[Abstract] Increasing use of radiopharmaceutical preparations (RPP) in diagnosis, and improving procedures and equipment for such use, warrant some examination of the efficiency of this use and of ways to minimize exposure of medical personnel and the population to radiation. Analysis has therefore been made of the existing structure of RPP use in medical establishments of the RSFSR. Data were obtained from 65 medical institutions of the RSFSR for 1974 and 40 Moscow medical institutions for 1974-1975. These data included the preparations used (isotopic sodium, gold, mercury in neohydrin, iodine in hippuran, phosphorus, iodine in Bengal Rose dye, iodine in albumin,

strontium, chromium), amounts of RPP acquired, percent of institutes which do use the RPP and how much they employ, and amounts used as a function of the institution class (e.g., dispensary or hospital). Data on research use of RPP introduced a complication, for use depended on the nature of the research themes. Recommendations are made for optimal use of RPP and for a reporting form which would assist processing of use-data--the preparation name, amount acquired, how used (therapy or diagnosis), number of patients and their pertinent handling, and loss of radioactivity of the RPP for whatever reason. No references.

Therapy

USSR UDC 617-001.17-092.9-085.355:577.152.344.042.2-07:577.175.85

INFLUENCE OF A POLYVALENT INHIBITOR OF BOVINE LUNG PROTEINASES ON THE CONDITION OF THE KININ SYSTEM IN BURN SHOCK AND IN ACUTE BURN TOXEMIA

Moscow VOPROSY MEDITSINSKOY KHIMII in Russian Vol 23, No 5, Sep/Oct 77
pp 689-700 manuscript received 4 Nov 76

PASKHINA, T. S., DOLGINA, M. I., NARTIKOVA, V. F., KRINSKAYA, A. V., MOROZOVA, NA. A. and ROSSINSKAYA, YE. B., Institute of Biological and Medical Chemistry, Academy of Medical Sciences USSR; Department of Thermal Injuries, Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] Paskhina has reported earlier (1972,1976) a stimulation of the kinin system in burn patients during the burn shock stage and acute burn toxemia; she suggested that the excessive formation of kinins had an unfavorable effect in the early stages of burn pathogenesis. The proteinase inhibitors, trasilol and contrical (VEB Arzneimittelwerk, East Germany) had shown a favorable clinical action in toxemia and septic toxemia. The authors now report tests of a Soviet-produced proteinase inhibitor, ingitril (produced from cattle lung tissue by the All-Union Scientific Research Institute of the Meat Industry), on 16 patients, and of contractil, on 4 patients (Ingitril is described as analogous to contractil). 100-250 units of the agent was administered (dropwise, 1 hr) intravenously once per day for the first six to seven days of the burn disease (extensive second, third and fourth degree burns). In burn shock and in acute burn toxemia, burn patients show a decrease in kallikreinogen--a decrease which indicates activation of the kallikrein-kinin system. However, those patients who were treated with the inhibitor showed a less-pronounced decrease in kallikreinogen; the inhibitor also depressed blood serum total arginine-esterase activity. Treatment with ingitril increased content of alpha-antitrypsin in the burn patients, within 24-48 hr after the burn. The ingitril apparently induces a decrease in kallikrein-kinin activity in patient blood plasma and alters the activity of those enzymes involved in kinin formation after burns. Positive clinical findings suggest the expediency of use of the trasilol type of proteinase inhibitor in early burn therapy, especially in the burn shock and burn toxemia phases. Figures 3; references 26: 17 Russian, 9 Western.

USSR

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USE OF A PLACENTA SUSPENSION IN THE TREATMENT OF PULMONARY TUBERCULOSIS

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 2, 1977 pp 9-11
manuscript received 26 Jan 76

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[Abstract] Forty-two male and female patients with pulmonary tuberculosis averaging 4.8 months in duration received a placenta suspension (intramuscular injection of 0.6 to 2 ml once a week for a month) as part of combination therapy that also included antibacterial agents, vitamins, steroid hormones, etc. A favorable therapeutic response was observed 1.5 times more often in the patients that received the placenta suspension than in the controls (88.1 and 65.3% respectively). Caverns were closed in 82.4 and 59.6%, respectively. The suspension accelerated the resorption of infiltrates in the lungs, thereby slowing the appearance of fibrous and sclerotic changes and reducing the number of tuberculomas. As a result, only 4.8% of the patients in the main group required surgery compared to 11.5% of the controls.

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USE OF POLYDEISIS, DROPERIDOL AND PHENTANYL IN EXPERIMENTAL TRAUMATIC SHOCK

Moscow PROBLEMY GEMATOLOGII I PERELIVANIA KROVI in Russian Vol 22, No 7, 1977 pp 40-42 manuscript received 21 Jul 76

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[Abstract] A study of the therapeutic effect of blood substitute polydesis (20 ml/kg)(a solution of low-molecular-polyvinyl alcohol), in experiments on rabbits (40) subjected to traumatic shock by the Kennon method and also the effect of polydesis infusion with droperidol (1.0 mg/kg) and phentanyl (0.01 mg/kg) indicated that polydesis infusion increases the arterial blood pressure, improves the acid-alkaline balance, reduces the concentration of lactic acid and potassium and prolongs the life of the rabbits. Injection of polydesis simultaneously with droperidol and phentanyl provided the best correction of metabolic shifts and prolonged the life of the rabbits.

References 13: 10 Russian, 3 Western.

USSR

EXPERIMENTAL GROUNDS FOR AN INHALATION PROCEDURE IN PROPHYLAXIS OF
LOWLEVEL MERCURY POISONING

Kiev ZHURNAL USHNYKH NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 3, 1977
pp 50-54

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[Abstract] On the basis of experiments on white rats, the author demonstrates that treatment of low-level mercury poisoning may be possible using hydrogen sulfide and carbon dioxide inhalation therapy. Clinical tests were conducted on 219 workers at the Nikitov mercury plant. At the outset of these tests 48 workers were suffering from mercury poisoning, 78 had elevated levels of mercury, and 97 had acceptable levels. They inhaled hydrogen sulfide and carbon dioxide with concentrations of 15-30 and 60 mg/liter of hydrogen sulfide. Immediately after completion of the inhalation therapy, the mercury content in the urine of these workers increased sharply. However, long-term inhalation treatment produced, after 3 years, a decrease in urine mercury levels. The most dramatic decrease was in the "normal" group, while those with mercury poisoning exhibited the smallest decrease. The author concludes that early use of the inhalation can be effective as a therapeutic prophylactic procedure against mercury poisoning for workers who are in contact with mercury vapors. References 11:
9 Russian, 2 Western.

Veterinary Medicine

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MIAZOL'--A BIOLOGICAL PREPARATION FOR CONTROL OF MYLASES IN ANIMALS

Moscow VETERINARIYA in Russian No 6, Jun 77 pp 41-42

TONKONOZHENKO, A. P., ALEKSEYENOK, A. YA., SIMETSKIY, M. A. and KUDRYAVTSEV, YE. N., All-Union Scientific Research Institute of Veterinary Sanitation

[Abstract] A biological preparation in aerosol form is proposed for control of myiases in animals. The active biological agent is thuringin, based on the thermostable exotoxin Bac. thuringiensis. This agent has high larvicidal activity for a number of diptera and is practically harmless for most warm-blooded animals and man, which has been proved by Soviet and foreign studies. The preparation was tested on sheep at a collective farm in the Stavropol'skiy Kray. Open wounds on the sheep were treated with Miazol' during shearing. The aerosol was foamed into the wound for 3-5 s, and within 25-30 s the foam has disappeared. On the following day, a water-resistant elastic film had formed over the wound. The Miazol' foam showed no irritant properties. Within three days, about 0.8% of the experimental group showed myiases, while the control group showed 38.2% of the sheep affected. Wounds in the control group healed more slowly 5-7 days after shearing than in the experimental group. It is recommended that extensive tests be done on Miazol' as preventive treatment for Wohlfartiosis in sheep in different regions of the USSR.

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COMPARATIVE EVALUATION OF AEROSOL GENERATORS

Moscow VETERINARIYA in Russian No 6, Jun 77 pp 38-41

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[Abstract] A comparative evaluation was done on the technical characteristics of various aerosol generators--pneumatic ejector (PEGA-2), jet action (SAG-1) and disk type (DAG-2)--and the viability of vaccine bacteria was determined for dispersal by these mechanisms. The vaccine tested was for swine erysipelas. It was found that the SAG-1 generator has a discharge rate of liquid of 80 ml/min as opposed to 8 ml/min for the PEGA-2, and that it is 1.73 times more economical with respect to airflow as compared with the PEGA-2 generator. The productivity of the disk generator is 1.5 times greater than the PEGA-2, but 7 times less than the SAG-1. Inactivation of bacteria was also lower for the SAG-1 generator, being 85.4% as compared with 88.7% for the PEGA-2 and 99.4% for the DAG-2. Figures 3.

USSR

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INVESTIGATION OF THE PATHOGENICITY OF ATYPICAL MYCOBACTERIA IN ACCORDANCE WITH HISTOLOGICAL SHIFTS

Moscow VETERINARIYA in Russian No 6, Jun 77 pp 43-48

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[Abstract] The authors conducted a study of the pathogenicity of certain strains of atypical mycobacteria isolated at the Ukrainian Scientific Research Institute of Experimental Veterinary Science. Experimental animals (guinea pigs and rabbits) were inoculated with the pathogens, and the results are compared for certain pathohistological criteria. The microorganisms studied were two strains of bovichromogenic mycobacteria (Ch and M), two strains of non-chromogenic mycobacteria (K and Shch-18) and a vaccine strain (w-115). The highly pathogenic standard was a Valle strain of bovine type. Tests with guinea pigs showed that atypical strains of mycobacteria induce pronounced productive processes in the lungs, liver, lymph nodes and spleen, reaching maximum development within 1-2 months, and showing reverse development after 5-6 (less frequently 7) months. By studying the characteristics of the observed shifts and the time of their reverse development one can determine the pathogenicity of the strains of atypical mycobacteria. The more pathogenic strains induced extensive paraspécific productive diseases in the lungs, as well as foci and fields of epithelioidal cells, sometimes with indications of the beginning of purulent fusion, in the local lymph nodes and spleen--productive foci measuring 200-300 μ m and necrotic microsections of hepatocytes in the liver. When the pathogens are injected, a lengthy process is induced with components of specific granulation tissue showing up in the early stages. The nature, duration and phase properties of skin reactions with hypodermic injection of atypical mycobacteria according to visual and histological evaluation enabled determination of the degree of pathogenicity of the mycobacteria. The strains that belong to the non-chromogenic category (in Ranion's classification) induced more severe pathological shifts in the organs studied than did vaccine strain w-115, and therefore they should be classified as pathogens. Figure 1.

USSR

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USE OF MORPHOLOGIC, PHYSIOLOGIC, BIOCHEMICAL, AND IMMUNOGENETIC CRITERIA
IN ANIMAL BREEDING

Moscow IZVESTIYA TIMIRYAZEVSKOY SEL'SKOKHOZYASTVENNOY AKADEMII in Russian
No 5, 1977 pp 13-27 manuscript received 20 Apr 77

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[Abstract] A review is presented of world literature and the studies conducted in the USSR on the use of various phenotypic expressions in breeding desirable traits in farm animals. Emphasis is placed on the difficulties inherent to such work in view of, for instance, pleiotropy and polygenic inheritance. Nevertheless, it has become apparent that the use of proper morphologic, biochemical, physiologic, and immunogenetic criteria may greatly advance the science of animal breeding as witnessed by the discovery of positive correlation in the case of Yaroslavl dairy cattle between milk productivity on the one hand, and plasma volume, blood volume, blood phosphorus concentration, etc., on the other. References 60: 1 Polish, 56 Russian, 3 Western.

CSO: 1840

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